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THE PRACTITIONER

THE LEADING MONTHLY MEDICAL JOURNAL

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CONTENTS.

PAGE

1. THE CLINICAL SYMPTOMS OF CHRONIC INTESTINAL STASIS 109
By Sir Arbuthnot Lane, Bart., M.S., F.R.C.S.

2. VENEREAL DISEASE:—

(a) THE PREVENTION OF VENEREAL DISEASE AND THE ABORTIVE TREATMENT OF GONORRHŒA 114
By Brevet-Colonel L. W. Harrison, D.S.O., K.H.P., R.A.M.C.

(b) THE PROPHYLAXIS OF VENEREAL DISEASE 124
By C. F. Marshall, M.Sc., M.D., F.R.C.S.

(c) VENEREAL DISEASES AS WE SEE THEM TO-DAY 129
By J. E. R. McDonagh, F.R.C.S.

(d) TREATMENT OF 100 CASES OF GONORRHŒA BY IONIZATION AT A STATIONARY HOSPITAL, B.E.F. (*Illustrated* 145
By Captain F. W. Baker Young, R.A.M.C. (T.F.)

3. EXTENSIVE SHELL WOUND OF SHOULDER GIRDLE WITH OPERATION NOTES ON CONSERVATIVE SURGERY. (*Illustrated*) 151
By H. C. Orrin, F.R.C.S.

4. A CASE OF TETANUS OF LONG INCUBATION, TREATED BY ANTI-TETANIC SERUM; SEVERE ANAPHYLAXIS: RECOVERY, BUT WITH DEATH LATER FROM GANGRENE OF THE LUNG 154
By P. R. Cooper, M.D., B.Sc., F.R.C.S.

5. DREAMS AND THEIR VALUE IN TREATMENT 156
By M. Culpin, M.B., F.R.C.S., Captain (Temp.) R.A.M.C.

6. PRACTICAL NOTES:—*A New Test for Albumen* 163
A Test for Blood in Urine, Fæces, and other Pathological Fluids ... 163
A Dressing for Ulcers 164
Opiates in Cardio-Vascular Affections 164

7. REVIEWS OF BOOKS 165

8. PREPARATIONS, INVENTIONS, ETC. 167

For Detailed Contents, *see pages* xii and xiv; For Editorial, Business and Advertisement Notices, *see page* xlviii; For Index to Announcements, *see page* vi.

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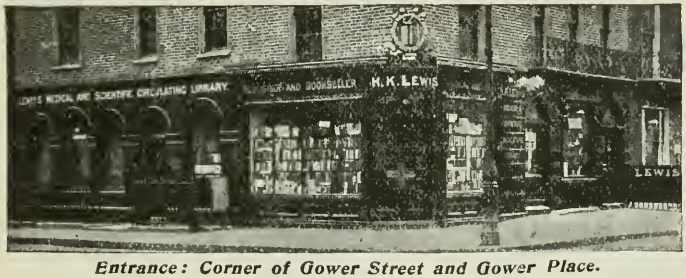

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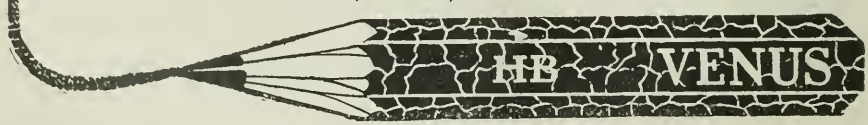

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INDEX TO ANNOUNCEMENTS.

ASYLUMS:— PAGE

Asylum (Gentlemen's) at Dublin - - - - - x
Asylum (Ladies') at Dublin - x
Court Hall, Kenton - - xi
Grange, The (Rotherham) - x
Northumberland House (London) - - - - - x
Peckham House (London) - x

AMBULATORY APPLIANCES:—

Mr. C. A. Hoeffticke - xliv

BANKS:—

London County Westminster and Parr's - - - vii
London Joint City and Midland - - - - - ix

BOOKS:—

Diseases of the Heart—Frederick W. Price (Frowde and Hodder & Stoughton) iv
Glaucoma: A Handbook for the General Practitioner—Lt.-Colonel R. H. Elliot (Lewis) - - - - - ii
Glaucoma: A Textbook for the Student of Ophthalmology—Lt. Colonel R. H. Elliot (Lewis) - - - ii
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Sclero-Corneal Trephining in the Operative Treatment of Glaucoma—Lt.-Colonel R. H. Elliot (Pulman & Sons) - - ii

CIGARETTES:—

De Reszke - - - - - v

DEMOBILIZATION, etc.:—

Ministry of Labour - - xiii

DISPENSING SERVICE:—

Boots' Pure Drug Co. - xxvii

FOODS, COCOAS, &c.:—

Benger's Food - - - xl
Cadbury's Cocoa - - xi
Callard's Diabetic Foods - xx
Glaxo - - - - - xxvi
Jardox Beef Tea - - xvi
Vi-Cocoa - - - - xxi

HEALTH RESORTS, HYDROS, &c.:—

Bournemouth Hydro. - x
Caterham Sanitarium - xi

HOMES, &c.:—

Carlton House (Hereford) - xi
Manna Mead (Blackheath) x

INSURANCE:— PAGE

Clerical, Medical & General Life Assurance Society - ii
Ocean Accident and Guarantee Corporation, Ltd. - xlvi

MEAT JUICES:—

Valentine's *Inside Back Cover*

MINERAL WATERS:—

Vichy - - - - - - viii

PENCILS:—

"Venus" Pencils - - iv

PHARMACEUTICAL PREPARATIONS, &c.:—

Ambrine—Anglo-French Drug Co., Ltd. - - i
Antikamnia—J. M. Richards & Sons - - - - xxiii
Antiphlogistine — Denver Chemical Co. - - - - xlii
Arhéol (Astier) — Wilcox, Jozeau & Co. - - - - xii
Blenosan—R. Ferber, Ltd. xvii
Byno-Chrismol — Allen & Hanburys, Ltd. - - xxviii
Bynol—Allen & Hanburys, Ltd. - *Outside Back Cover*
Collosols—Crookes' Laboratories - - - - xxix
Coneosan (914) — Modern Pharmacals - - xxxiii
Digalen — Hoffmann - La Roche Chemical Works, Ltd. - - - - - xxxix
Elixir of Glycerophosphates—Parke, Davis & Co. - xxv
Elixir Terperoin (Squire)—Squire & Sons, Ltd. - - xiv
Evatmine—British Organotherapy Co., Ltd. - - viii
Fellows' Syrup of Hypophosphites - - - xiii
Galyl—Anglo-French Drug Co., Ltd, - - - - i
Genasprin — Genatosan, Ltd. - - - - - xli
Glucarsenol in Ampsyring—Modern Pharmacals xxxiii
Hemaboloids—J. M. Richards & Sons, Ltd. - - xviii
Hematic Hypophosphites—Parke, Davis & Co. - xxv
Hormotone—G. W. Carnrick Co. - - - - - xv
Iodex—Menley & James, Ltd. - - - - - xi
Iodogénol — Anglo-French Drug Co., Ltd. *Inside Front Cover*
Kerocain — T. Kerfoot & Co., Ltd. - - - - xxx
Kerol—Quibell Bros., Ltd. xix
Lactopeptine—J. Morgan Richards & Sons - - xxi
"Lysol" Evans — Evans Sons, Lescher and Webb, Ltd. - - - - xxxvii
Nucleo-Proteid Compound Tablets — Parke, Davis & Co. - - - - - xxv

PHARMACEUTICAL PREPARATIONS, &c. —*cont.* PAGE

Nujol—Nujol Laboratories xlv
Omnopon—Hoffmann - La Roche Chemical Works, Ltd. - - - - - xxxiv
Organotherapeutical Products — British Organotherapy Co., Ltd. - - xxxv
Ovaltine — A. Wander, Ltd. - - - - - xxii
Pastil. Terperoin Comp. (Squire)—Squire & Sons, Ltd. - - - - - xiv
Pellanthum—Handford & Dawson - - - - xviii
Pulticine — Oppenheimer, Son & Co., Ltd. - - xvi
Riodine—Wilcox, Jozeau & Co. - - - - - xii
Sal Hepatica—Bristol-Myers Co. - - - - xix
Salvarsan — Evans, Sons, Lescher & Webb - xxxvii
Sanatogen—Genatosan, Ltd. - - - - - - xxxvi
Santal Midy—Laboratoire de Pharmacologie Generale - - - - - xx
Santal Midy Capsules—Laboratoire de Pharmacologie Generale - - xx
Special Pharmaceutical Preparations — Anglo-French Drug Co., Ltd. - i
Sphagnol—Peat Products, Ltd. - - - - - xvii
Sulphaqua—S.P. Charges Co. - - - - - xxi
'Tabloid' Laxatives—Burroughs, Wellcome & Co. - xliii
Triple Glycerophosphates with Nuclein Tablets—Parke, Davis & Co. - - xxv
Valkasa—J. Woolley, Sons & Co. - - - - xxiii
Vitafer—Southall Bros. & Barclay - - - - xviii
Vitamogen — Vitamogen, Ltd. - - - - - xlvii
Yadil—Clement & Johnson - - - - - xxxii

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Pinewood Sanatorium - x
Rostrevor Sanatorium - x

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Artificial Limbs—F. G. Ernst - - - - - viii
Curtis Abdominal Support—Walton & Curtis - - xvi
"Galvanoset"—Medical Supply Association - xxxviii
Salmon Ody Trusses—Salmon Ody, Ltd. - - xviii

TONIC WINES:—

Hall's Wine - - - xxxi
Junora - - - - xix
Wincarnis - - - - xxiv

WHISKY:—

"G.B" Diabetes - - xix

FOR EDITORIAL AND BUSINESS NOTICES, SEE PAGE xlviii.

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Reserve . .. 600,000 0 0			
Bank Premises .. 300.000 0 0			
Bonus to Staff .. 140.000 0 0			
£1,535070 19 3			
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And a balance to carry forward ..	**377,560**	7	5
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ASSETS.	£	s.	d.
CASH— In hand and at Bank of England ..	**47,476,604**	2	8
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	84,446,782	13	3
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Dr. LIABILITIES AND ASSETS, 31st December, 1918. Cr.

To	£	s.	d.
Capital Paid up, viz.:—			
£2 10s. 0d. per Share on 2,869,079 Shares of £12 each	7,172,697	10	0
,, Reserve Fund	7,172,697	10	0
,, Dividend payable on 1st February, 1919	451,879	18	10
,, Balance of Profit and Loss Account, as below	675,097	14	7
	15,472,372	13	5
,, Current, Deposit and other Accounts	334,898,435	12	6
Acceptances on account of Customers	13,145,849	2	11
	£363,516,657	8	10

By	£	s.	d.
Cash in hand (including Gold Coin £8,000,000) and Cash at Bank of England	63,756,371	2	5
,, Cheques on other banks *in transitu*	2,001,486	12	7
,, Money at Call and at Short Notice	65,809,169	12	4
,, Investments:—			
War Loans, at cost (of which £432,979 15s. is lodged for Public and other Accounts) and other Brit. Gov. Securities ..	57,463,594	19	3
Stocks Guaranteed by the British Government, and Indian Rly. Debentures	468,383	12	0
British Railway Debenture and Preference Stocks, British Corporation Stocks	1,112,725	19	8
Colonial and Foreign Government Stocks & Bonds	1,410,465	16	10
Sundry Investments ..	1,145,481	1	6
,, Bills of Exchange	39,249,296	3	2
	232,416,975	1	9
,, Advances on Current and other Accounts..	99,213,614	15	6
,, Advances on War Loans ..	14,218,201	2	1
,, Liabilities of Customers for Acceptances	13,145,849	2	11
,, Bank Premises, at Head Office and Branches ..	3,762,327	6	7
,, Belfast Bank Shares:—			
50,000 £12 10 0 Old Shares £2 10 0 paid			
150,000 £12 10 0 New Shares £2 10 0 paid			
Cost £1,237,500 0 0			
Less part Premium on Shares issued 477,810 0 0	759,690	0	0
	£363,516,657	8	10

Dr. PROFIT AND LOSS ACCOUNT for the year ending 31st December, 1918. Cr.

To	£	s.	d.
Dividend at 18 per cent. p.a. for the year ending 31 Dec., 1918, less Income Tax ..	919,885	10	5
,, Reserve Fund for future Contingencies	600,000	0	0
,, Salaries and Bonus to Staff serving with H.M. Forces and Bonus to other Members of the Staff	489,132	14	7
,, Bank Premises Redemption Fund	100,000	0	0
,, Officers' Pension Fund ..	100,000	0	0
,, Staff Widows' Fund	50,000	0	0
,, Reserve Fund	500,000	0	0
,, Balance carried forward to next account	675,097	14	7
	£3,434,115	19	7

By	£	s.	d.
Balance from last Account ..	733,785	5	8
,, Net profits for the year ending 31 Dec., 1918, after providing for all Bad and Doubtful Debts	2,700,330	13	11
	£3,434,115	19	7

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W. G. BRADSHAW, A. H. GOSCHEN, DEPUTY-CHAIRMEN.
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REPORT OF THE AUDITORS TO THE SHAREHOLDERS OF THE LONDON JOINT CITY & MIDLAND BANK LIMITED.

In accordance with the provisions of Sub-section 2 of Section 113 of the Companies (Consolidation) Act, 1908, we report as follows:—

We have examined the above Balance Sheet in detail with the Books at Head Office and with the certified Returns from the Branches. We have satisfied ourselves as to the correctness of the Cash Balances, Cheques on other Banks *in transitu* and the Bills of Exchange, and have verified the correctness of the Money at Call and Short Notice. We have also verified the Securities representing the Investments of the Bank, and having obtained all the information and explanations we have required, we are of opinion that such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Company's affairs according to the best of our information and the explanations given to us and as shown by the books of the Company.

LONDON, *14th January, 1919* WHINNEY, SMITH & WHINNEY, CHARTERED ACCOUNTANTS, *Auditors.*

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CONTENTS.

PAGE

THE CLINICAL SYMPTOMS OF CHRONIC INTESTINAL STASIS. By SIR ARBUTHNOT LANE, BART., M.S., F.R.C.S. 109

VENEREAL DISEASE:—

(*a*) THE PREVENTION OF VENEREAL DISEASE AND THE ABORTIVE TREATMENT OF GONORRHŒA. By BREVET-COLONEL L. W. HARRISON, D.S.O., K.H.P., R.A.M.C. 114

(*b*) THE PROPHYLAXIS OF VENEREAL DISEASE. By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. 124

(*c*) VENEREAL DISEASES AS WE SEE THEM TO-DAY. By J. E. R. MCDONAGH, F.R.C.S. 129

(*d*) TREATMENT OF 100 CASES OF GONORRHŒA BY IONIZATION AT A STATIONARY HOSPITAL, B.E.F. (*Illustrated.*) By CAPTAIN F. W. BAKER YOUNG, R.A.M.C. (T.F.) 145

EXTENSIVE SHELL WOUND OF SHOULDER GIRDLE, WITH OPERATION NOTES ON CONSERVATIVE SURGERY. (*Illustrated.*) By H. C. ORRIN, F.R.C.S. 151

A CASE OF TETANUS OF LONG INCUBATION, TREATED BY ANTI-TETANIC SERUM; SEVERE ANAPHYLAXIS; RECOVERY, BUT WITH DEATH LATER FROM GANGRENE OF THE LUNG. By P. R. COOPER, M.D., B.Sc., F.R.C.S. 154

DREAMS AND THEIR VALUE IN TREATMENT. By M. CULPIN, M.B., F.R.C.S., CAPTAIN (TEMP.) R.A.M.C. 156

(*Continued on page* xiv.)

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CONTENTS (*continued*).

PAGE

PRACTICAL NOTES:—*A New Test for Albumen.—A Test for Blood in Urine, Fæces, and other Pathological Fluids.—A Dressing for Ulcers.—Opiates in Cardio-Vascular Affections* .. 163

REVIEWS OF BOOKS:—

Syphilis and Public Health (Vedder) 165

Massage and Medical Gymnastics (Kleen) 166

Lessons on Massage (Palmer) 166

Gymnastic Treatment for Joint and Muscle Disabilities (Deane) 166

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Balmosa and Lin. Analgesic (Oppenheimer, Son & Co., Ltd.) 167

The "Limpet" System of Electrodes (Medical Supply Association, Ltd.) .. 167

Aniodol (Anglo-French Drug Co., Ltd.) 167

Genasprin (Genatosan, Ltd.) 163

Quineine (Laboratoire des Produits Scientia) 168

"Néorosthénine" Freyssinge (Anglo-French Drug Co., Ltd.) 163

Cod Liver Oil Jelly (Meggeson & Co., Ltd.) 168

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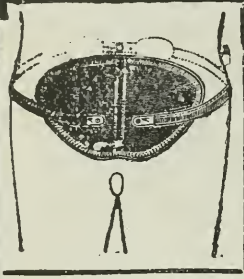

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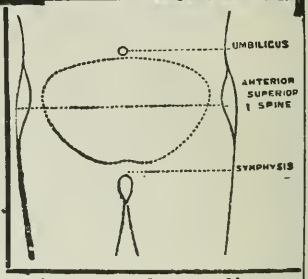

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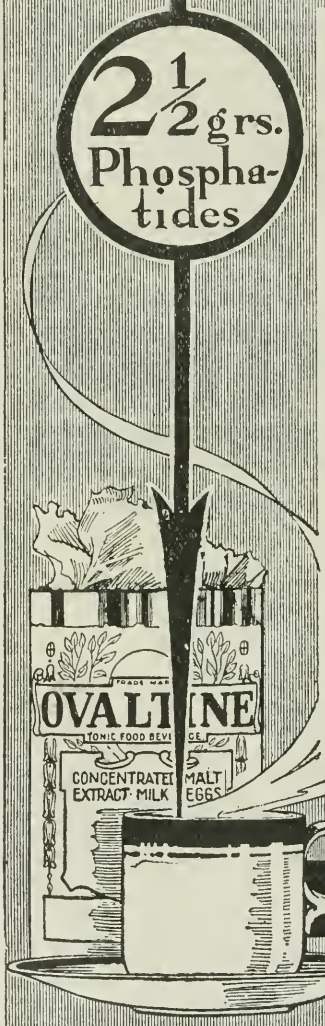

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Calcium Hypophosphite ...	1/8 grain
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Iron Hypophosphite ...	5/32 grain
Manganese Hypophosphite ...	1/8 grain
Quinine Hypophosphite ...	7/128 grain
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This combination of tonic, hæmatinic and reconstructive agents is eminently calculated to enrich the blood, stimulate the appetite, promote nutrition and energise the system generally.

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Supplied in bottles of 4, 8, 16 and 80 fluid ounces.

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Each tablet contains:—

Potassium Glycerophosphate ...	1 grain
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(*chocolate-coated*)

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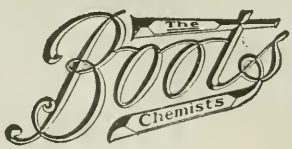

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"Byno Chrismol" marks a new departure in the treatment of Chronic Constipation, etc. It presents 50 per cent. by volume of "Chrismol," a specially selected and purified Russian mineral oil, in intimate combination with the "Allenburys" Malt Extract.

"Byno Chrismol" possesses the following advantages :

It is prepared with mineral oil of the proper viscosity and chemical constitution to ensure efficient lubrication with a complete absence of bye-effects.

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"Byno Chrismol" is specially indicated in Chronic Constipation with symptoms of auto-intoxication, Intestinal Stasis, Mucous Colitis, and in the convalescent stage of Typhoid Fever ; also after Childbirth, during the Nursing Period and whenever a simple laxative is required by child or adult.

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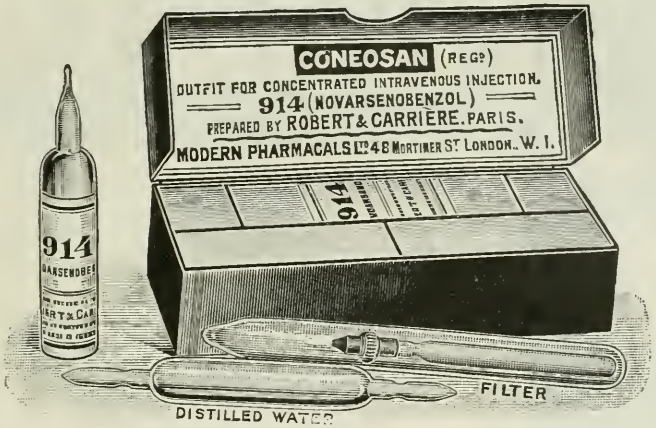

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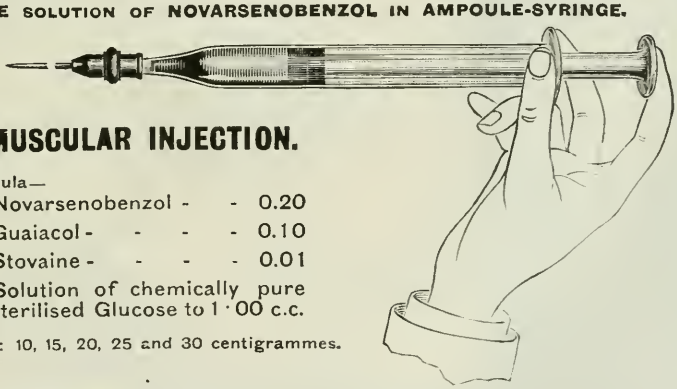

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Solution of chemically pure sterilised Glucose to 1·00 c.c.

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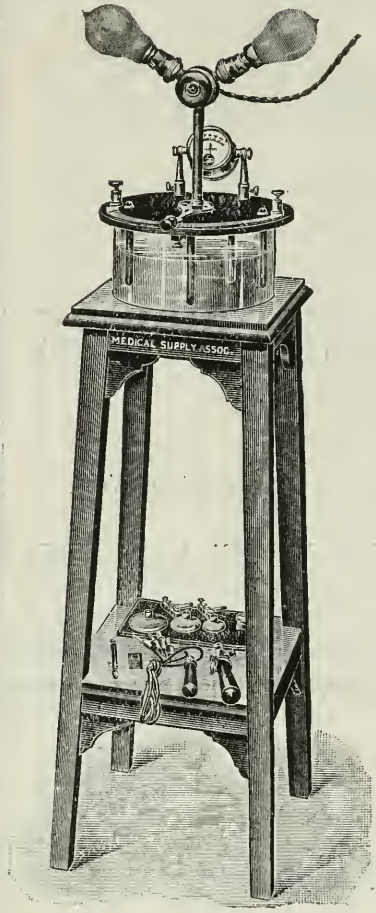

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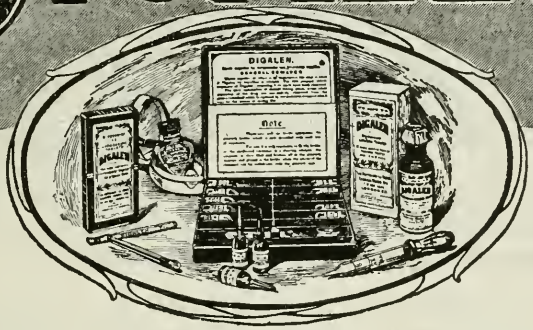

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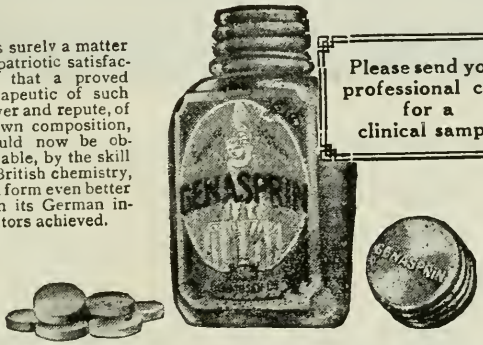

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HOEFFTCKE'S AMBULATORY EXTENSION APPLIANCE AND WAR SPLINT.

By C. A. HOEFFTCKE, 7, *Harley Street*, W.1.

Fig. 1.—Standing on fractured femur.

Fig. 2.—Fractured lower third of femur.

These two illustrated cases, walking on their fractured limbs, show clearly the difference between the treatment of severe fractures with the Thomas's splint and my Ambulatory appliance and war splint.

The reason I invented the war splint in the beginning of the war was, that I was not satisfied with the action of the Thomas's splint, of which I had considerable experience.

I maintain that the ring cannot be fitted so as to keep the pressure solely on the tuber-ischium and surrounding gluteal muscles like my splint does, as the patient wriggles down and the ring slips up, with the result that considerable pressure has to be borne on the os pubis instead, which in most cases is unbearable if any extension is to be maintained.

This painful pressure defeats the object of the Thomas's splint, as the muscles contract and counteract the extension. Nearly 90% of the war cases where I was called in by the surgeons were treated with a Thomas's splint for a considerable time, and in some of them it was put on in the aid-post, like the femur case shown above, with the result of the fractures either being ununited or in bad position.

Even in these most difficult cases the treatment with my splints has been the means of getting union with the fragments in good apposition, and most of those patients maintain that had my splint been applied in the first instance considerable time of suffering would have been spared them.

A full description and illustration of these two cases can be read in my announcements in The Lancet, Nov. 9th, 1918, and Feb. 8th, 1919.

Fig. 3.—Hoefftcke's War Splint.

Fig. 4.—Fractured tibia; much loss of bone.

THE PRACTITIONER.

MARCH, 1919.

THE CLINICAL SYMPTOMS OF CHRONIC INTESTINAL STASIS.

By Sir ARBUTHNOT LANE, Bart., M.S., F.R.C.S.

Consulting Surgeon to Guy's Hospital, etc.

THE CLINICAL ASPECT OF CHRONIC INTESTINAL STASIS.

The symptoms of which the patients usually complain are generally comprised under the vague term indigestion. They may be roughly divided into two groups depending on the preponderance of the mechanical results of stasis or the associated results of auto-intoxication. These occur together in varying proportions, the patient selecting what is to her of the greatest importance.

In the large majority of cases, the symptoms complained of are those which result from a distension of the small intestines, duodenum, and stomach, produced by the damming back of their contents and by the chemical changes they undergo.

To make this clear, it would be well to consider briefly the causation of this condition, dealing in the first instance with the mechanical results of stasis and subsequently with the toxic effects.

THE MECHANICAL ASPECT OF CHRONIC INTESTINAL STASIS.

The delay in the passage of the intestinal contents originates in the pelvic colon, and extends from it through the length of the large intestine.

The free passage of the chyme into the cæcum may be obstructed by the accumulation of fæcal material in the latter. This may be due to the difficulty of entry into a large distended prolapsed cæcum often twisted on its axis, or to the presence of a " controlling appendix " which partially or completely obliterates the lumen of the bowel, especially in the erect posture, or a similar control may be exerted by an acquired band forming the " ileal kink " or from all three causes acting together in varying degrees. However the obstruction arises the result is the same, namely, that the contents of the small intestine are dammed back to an extent proportionate to the obstruction.

The accumulated stagnating contents of the small intestine may produce symptoms which are entirely mechanical in origin. They result from the abrupt angulation and the consequent obstruction of the duodeno-jejunal junction, which is brought about by the drag exerted upon it by the abnormally loaded small intestine. The symptoms and conditions producing them are caused by the over-distension of the duodenum, the spasm of the pylorus, the distension of the stomach, the changes in the mucous membrane of

the duodenum and lesser curvature, which result from strain, and the similar changes developing in the mucous membrane about the obstructed pylorus from the violent impact of food as the stomach endeavours to expel it forcibly from its cavity. These are all stages in a simple mechanical sequence. Owing to the shape of the duodenum and its relationship to the abdominal wall such obstructive changes, which result in the formation of peptic ulcers from excessive angulation of the duodeno-jejunal junction, are much more common in man than in woman. They also occur more frequently in the young woman than in the woman whose abdomen has been rendered flaccid by pregnancy or obesity or both, since the angulation of the duodeno-jejunal junction varies directly with the general intra-abdominal pressure. It is interesting to note that 75 per cent. of peptic ulcers are duodenal, which proportion is exactly what one would expect on general principles. (C. Graham, page 34, *Collected Papers of Mayo Clinic*, 1917.)

THE TOXIC ASPECT OF CHRONIC INTESTINAL STASIS.

The mechanical symptoms above described may completely overshadow the associated evidences of the auto-intoxication, which exist in a degree varying directly with the amount and extent of the infection of the contents of the small intestine from which the nutrition of the body is derived, and on this account they usually escape observation and recognition.

Dealing with the toxic effects of the delay, beginning with the large bowel they may cause infective processes in its mucous membrane, which are classified under the term "colitis." They begin in and about the iliac segment of the colon and tend to extend along its length.

The forcible impact of the fæces upon the several surfaces, where the lumen of the bowel is obstructed by the development of acquired bands or by abrupt transitions in its calibre, may produce ulceration of a simple or malignant character. These areas are the vicinity of the junction of the cæcum and iliac colon where the acquired peritoneal bands occasionally constrict the bowel, the attachment to the transverse colon of the ligament that develops between the under surface of the liver, gall-bladder, duodenum, pylorus and transverse colon, at the splenic flexure, the last kink, and at the junction of the pelvic colon with the rectum and the anus.

Cancerous ulcers develop more frequently in the portions of the colon where the fæces are hardest.

The infection of the mucous membrane may involve the appendix, which is often anchored and its lumen constricted by acquired bands securing it to the abdominal wall or to the mesentery of the ileum.

The material that stagnates in the small intestine becomes infected with organisms which effect an entry into it from the cæcum. This infection may extend up to the duodenum, and from there to the liver and pancreas along the ducts of these organs and produce inflammatory changes in their walls. Calculi may form which, besides producing obstructive symptoms, may by their irritative impact

result in the development of cancer. It is obvious that any operation performed upon the gall-bladder or on the ducts of the liver and pancreas are for conditions that are of the nature of end-results, and by such a procedure alone no means are taken to deal with the primary cause of the trouble. In other words, the patient is not cured of the disease, though he is relieved from some of the symptoms to the extent of the surgical interference.

How far certain other changes in the liver and pancreas are the result of the extension of the infective process along the ducts, and how far they are due to the influence of deleterious matter in the blood of the portal, hepatic, and pancreatic vessels, it is difficult to determine with accuracy. This has been discussed in a paper in the *Lancet*, September 28, 1918, " Some Remarks on Chronic Intestinal Stasis."

Besides the infection of the ducts which communicate directly with the intestinal tract, organisms or their products are taken up from the intestine by the portal circulation and are carried to the liver. There the organisms are probably destroyed, and the poisonous material is converted into products which are excreted by the kidneys, skin, and bowel. Should these be absorbed into the circulation in excess of the destructive and converting capacity of the liver and of the ability of the excretory organs to eliminate them, symptoms arise which are regarded as evidence of intestinal auto-intoxication. These are now so generally recognized that they do not call for enumeration or description here. They vary in severity within the widest limits; in advanced conditions of stasis, they cause the greatest anxiety and urgently demand active treatment.

In consequence of the lowered vitality of the tissues in the body, owing to their being supplied with blood containing deleterious matter, organisms of various kinds are able to enter and obtain a foothold and to thrive in direct proportion to the depreciation in the resisting power of the tissues of the body. These could not enter the circulation or live in the tissues, if the contents of the small intestine were sterile.

THE RADIOGRAPHIC ASPECT OF CHRONIC INTESTINAL STASIS.

In dealing with any case of chronic intestinal stasis, it is necessary, besides obtaining a clear history of all the symptoms, to get a complete report from a radiologist, who is thoroughly familiar with this class of work, on the mode of passage of a bismuth meal along the entire length of the gastro-intestinal canal, and this should be supplemented by a bismuth enema. Many radiologists are of opinion that by providing the surgeon with a number of radiograms taken at intervals of time, the latter will be able to obtain from them sufficient information to guide him in his treatment of the case. Nothing can be more incorrect than this belief, since the screen work affords by far the most valuable information. The main points are :—

(1) The length of period that the meal remains in the *stomach*, the behaviour of the stomach, the mode of emptying.

(2) The size and shape of the *duodenum*, the mode in which it evacuates its contents, the form of the duodeno-jejunal junction.

(3) The length of time the meal remains in the *ileum*, the mode of

its evacuation, the degree of thickening of the walls of the terminal coil, the relation of the appendix to the end of the ileum, the evidence of the presence of an ileal kink.

(4) The size and position of the *cæcum*, with possible indication of its rotation.

(5) The mode of passage of the meal through the *large intestine*, the limitation by a band of the calibre of the bowel about the junction of the cæcum and ascending colon in the transverse colon, just below the gall-bladder where the acquired ligament is attached, which connects the gall-bladder to the pylorus, duodenum, transverse colon, at the splenic flexure, and at the last kink at the left pelvic brim. The form of the bowel must be examined with a view to determine the presence of inflammation of its wall or of diverticulitis.

The shape and size of the *pelvic colon* should also be carefully observed both in the case of the meal and in that of the enema, since this is a factor of the greatest importance. The presence or absence of gall-stones should be noted.

Beside this, the *chest* should be investigated to show the condition of the lungs, glands, heart, and large vessels.

It is difficult to exaggerate the importance of a thorough examination, since it not only furnishes the surgeon with complete evidence as to the mode of functioning of the canal, but it also not infrequently calls his attention to defects in the tract, which he would possibly or even probably have overlooked in operating for some definite condition.

This happens in a large number of cases, sometimes because the surgeon does not realize the utility of a bismuth meal, at other times because one end-result of stasis presents symptoms that appear so perfectly characteristic that the operator is satisfied to confine his attentions to the treatment of this condition alone, being probably unaware of its causation and regarding it as a primary disease.

THE INFLUENCE OF THE RECUMBENT POSTURE ON CHRONIC INTESTINAL STASIS.

In the recumbent position, the elongated pelvic colon evacuates its contents more readily than in the erect posture, while there is no longer a prolapse of the transverse colon tending to obstruct this portion of the bowel at the attachment of the ligament which develops to connect it to the gall-bladder and at the splenic flexure.

The cæcum does not fall so deeply into the pelvis and its rotation with the consequent torsion of this end of the ileum, which Dr. Jordan has described and demonstrated with such remarkable clearness, does not take place. *The Operative Treatment of Chronic Intestinal Stasis*, 4th edition, page 302.

While the patient is on the back, the ileum is freed to a varying extent from the control of a kink or from the pressure of an appendix anchored to the posterior surface of its mesentery.

As material passes freely from the ileum into the cæcum, the drag which the loaded small intestine exerts on the duodeno-jejunal junction ceases to exist and the contents of the duodenum are evacuated

freely and without any evidence of writhing of that portion of the bowel.

The flow of the gastric contents through the spasmodic pylorus improves steadily, and after a time all evidence of spasm at this aperture disappears.

The dilatation of the stomach and the spasm of the pylorus improve much more slowly than does the condition of the duodenum, which subsides with remarkable rapidity in many instances; consequently, it is obvious that one cannot expect an ulcer of the stomach, whether situated at the pylorus or on the lower curvature, to react with anything like the rapidity of a duodenal ulcer. A peptic ulcer is three times more difficult to produce than a duodenal ulcer, and is correspondingly *much* more tedious to cure.

THE EFFECT OF AN ABDOMINAL SUPPORT ON CHRONIC INTESTINAL STASIS.

In order to meet the prolapse of the viscera and the consequent angulation of the bowel at the several points at which it is fixed, great benefit may be obtained by pressure exerted on the lower abdomen in such a manner as to tend to keep the viscera up. An encircling belt does not do this effectually, since it serves to increase the intra-abdominal tension by its lateral pressure. A stay increases still further this defect.

On the other hand, the greatest advantage can be obtained from a support which acts on the lower abdomen only. This should press on the abdomen below the umbilicus.

The best form of support is that called the Curtis belt, which has been constructed for the purpose. It is of the nature of a truss, with a counter pressure behind and springs which control a central plate. This pressure meets the tendency to prolapse of the viscera in the erect posture. It also controls the veins in the splanchnic area, and by tending to keep blood up in the brain obviates that feeling of exhaustion or tiredness of which these patients complain so much.

It is surprising how many cases of stasis can be relieved by these very simple means.

THE EFFECT OF PARAFFIN ON CHRONIC INTESTINAL STASIS.

If paraffin is taken at a suitable interval before a meal it precedes it in its way through the tract. It facilitates the passage of the intestinal contents through the several points where they are likely to be held up by a mechanical obstruction or by spasm of a reflex or inflammatory origin. It, therefore, tends to overcome the delay of the material in the small intestine and also to hasten the passage of fæces through the large bowel. The advantage which paraffin affords is well demonstrated by its enormous sale all over the world. The radiologist is also well aware how difficult it is to obtain any accurate record of the passage of material through the gut—if the patient is taking paraffin. To do so, paraffin must be given up for about 10 days before an examination is made.

THE PREVENTION OF VENEREAL DISEASE AND THE ABORTIVE TREATMENT OF GONORRHŒA.

By Brevet-Colonel L. W. HARRISON, D.S.O., K.H.P., R.A.M.C.

Hon. Physician to His Majesty the King; Lecturer on Venereal Diseases, Military Hospital, Rochester Row, London.

When I had the honour of addressing a meeting last year on the "Management of Venereal Disease in the Civil Community," I gave reasons for the belief that the present war would be followed by a huge increase in venereal disease throughout the country, and that unless it was successfully combated, its effect on the efficiency, prosperity, and happiness of the nation would be disastrous.

As a preliminary to a paper on the prevention of venereal disease, it may not be out of place to recapitulate the reasons I advanced for this large prospective increase in venereal disease.

During the war there has grown up a huge army of women workers emancipated from domestic control, and large numbers of these have celebrated their freedom by "sowing their wild oats," while others have fallen victims to a sexual temptation which is doubtless stronger in time of war than in peace. The result is that many thousands have become infected with venereal disease. We have the proof of this in the figures, collected in various military hospitals, as to the occupation of the women who had infected soldiers suffering from venereal disease. I have divided them into two classes: amateurs, or women who received no payment, and prostitutes who did. The results show: in No. 1 Hospital, out of 1,288 cases of syphilis, 83·5 per cent.; in No. 2 Hospital, out of 1,188 cases of venereal disease of all kinds, 66·4 per cent.; and in No. 3, out of 5,691 cases, 64·6 per cent. were infected by amateurs. Roughly, one can say that two-thirds of all the patients in venereal hospitals for Imperial troops are there because of having had sexual intercourse with women who are not prostitutes in the ordinary sense of the word, and probably for the most part expect to settle down some day to respectable married lives. When you remember that the incidence of venereal disease in the Army stationed at Home has been approximately 48 per 1,000 for the period of the war, you will gather some idea of the number of these women who must be infected. When the war is over and the Army returns home to be disbanded, it is certain that for a time there will be considerably more promiscuous sexual intercourse than has prevailed during the war, and the intercourse will be largely

with these women who are already infected. It requires no great imagination to see that the result must be an enormous increase in venereal disease throughout the country. I would again remind you that the burden of coping with this venereal disease must chiefly fall on the civil community, because it will affect men who have for the most part been demobilized, *i.e.*, civilians no longer subject to military control.

At the date of my last address, the time for the civil community to take up the burden of venereal disease in very large numbers seemed far distant, and the necessity for energetic preparation may not have been felt to be urgent. At least, I gathered the impression from the subsequent discussion that most people, who were taking an interest in venereal disease, were fairly well content with the progress being made in the battle against it, and considered that, by the time the war came to an end, the civil community would be quite ready to deal with the problem. I must confess that I have not taken that optimistic view, though I realize that, thanks to a comparatively few devoted workers, more has been done in the past four years than in the previous four hundred towards the stamping out of venereal disease. One great thing remains to be done, which is to make the great general public realize that venereal disease is a peril to our national efficiency, that if anything is likely to make a C 3 nation of us it is this class of disease, and that it is urgently necessary for them to understand thoroughly how they should protect themselves against it. In spite of the energetic propaganda work of the National Council for Combating Venereal Disease and the support it has received from the Local Government Board, the ignorance of the general public on these matters is nothing less than appalling. On the one hand, it leads to a carelessness which fills our venereal hospitals, and on the other to an unreasoning fear of and a contempt for everything and everybody connected with venereal disease, which is anything but helpful or encouraging. Sometimes this fear leads to actions which would be rather amusing, if they did not reveal the pitiable ignorance of large sections of the community. For instance, the vicar of a parish in which one of our V.D. hospitals is situated confessed, soon after it was established there, that his congregation had threatened to forsake him if he called on the officer staff. In that parish there was something approaching an attempt to make the shopkeepers boycott the hospital, for fear that the money passed should convey the infection. In another place, the confession was made that the reason for not calling on the wife of the officer commanding a venereal hospital who lived, by the way, about two miles from the hospital, was the fear of carrying the disease home to the children. In still another place, where it was proposed to establish a venereal hospital on a camp which had lately been vacated by troops, the local editor besought the authorities to remember the boys' schools in the neighbourhood and the danger of contaminating an important water-supply with the germs of this horrible disease. I could relate numbers of instances which show the same ignorance on the part of the general public regarding these

diseases, and as I feel that we shall make poor progress until people are more enlightened, I cannot help feeling that the prospect of an early peace is finding us dangerously unprepared.

In my last address, I discussed the management of venereal disease in the civil community after its development. To-day I should like to review the means by which venereal disease may be prevented, or, in the event of preventive means failing, how the more prevalent—gonorrhœa—can be aborted.

Nobody could fail to support a campaign for the prevention of venereal disease, who has appreciated the difficulty of curing it after it has developed. It is true that, in the arseno-benzol and mercurial compounds, we have admirable remedies for the treatment of syphilis—remedies which make the ultimate cure a matter of almost mathematical certainty—but even here the conditions to be fulfilled, the long periods under which the patients have to remain under treatment and observation, for instance, and the skill and care to be expended over each individual case, make the management of syphilis, on the large scale which will be necessary, an immensely costly business. But syphilis comprises only about a quarter of all venereal disease, while gonorrhœa is more than twice as prevalent, as will be seen from this analysis of 933 cases of venereal disease showing the numbers of each variety :—

Syphilis - - - - -	253
Gonorrhœa - - - - -	621
Soft chancre - - - -	34
Other venereal diseases - - -	25

The successful management of gonorrhœa is immensely more difficult than that of syphilis. As you probably know, gonorrhœa has been looked on very lightly by the laity, and even now large numbers of doctors consider its cure to be a very trifling matter, involving the use of a syringe and the swallowing of some medicine for a few weeks. It is still difficult to make people believe that the cure of gonorrhœa is not simply a matter of reducing a purulent urethral discharge to an insignificant morning drop, or even of causing the drop to disappear; they cannot be made to realize that, under a standard of cure which requires less than complete sterilization of the genital passages from the point of view of gonococcal infection, the gynæcologist will be just as hard worked as ever removing diseased Fallopian tubes. The cure of gonorrhœa in the sense of freeing the patient of every gonococcus in his genital passages is one of the most difficult tasks in medicine. When it has to be applied to thousands and thousands of individuals, it must be considered to be a desperate public problem, and one which drives us to seek a solution in measures for the prevention of these diseases. I hope to show you that, from the medical point of view, the prevention of venereal disease is as easy as its cure is difficult.

The measures for the prevention of venereal disease may be

divided into two classes :—

(*a*) Those which are designed to prevent the establishment of a chain of infection, by securing sexual continence out of wedlock.

(*b*) Those designed to break the chain of infection after its establishment, when the first measure has failed.

I do not propose to say much concerning the first of these measures —the securing of sexual continence—because there are many others who are much more competent to speak on this aspect of the subject than I am, and it has already been discussed much more fully than the second, which is more purely medical. Although I do not believe that any campaign, which relied only on the teaching of sexual continence, could succeed in suppressing venereal disease before the damage had been done, I would not go so far as some in saying that such a campaign is a waste of energy; on the contrary, it is easy to prove that measures which have indirectly had the effect of distracting men from indulgence in promiscuous sexual intercourse, have had a most striking effect in reducing the amount of venereal disease. Much of the reduction in the incidence of venereal disease in the British Army, which is illustrated by this table, is undoubtedly due to the institution of healthy distractions in the form of games and

TABLE SHOWING THE RATIOS PER 1,000 PER ANNUM OF ADMISSIONS FOR VENEREAL DISEASE IN THE UNITED KINGDOM, ALDERSHOT COMMAND, AND LONDON DISTRICT, FROM 1885 TO 1913.

Year.	United Kingdom.	Aldershot.	London.
1885	275·4	321·7	339·4
1886	237·2	301·1	259·8
1897	127·5	130·0	165·2
1898	121·3	115·2	160·5
1899	111·2	96·2	150·2
1900	85·9	84·4	132·2
1901	95·6	69·8	151·1
1902	110·1	86·0	179·1
1903	109·1	115·7	165·4
1904	107·6	79·1	165·2
1905	90·5	79·9	176·5
1906	81·8	69·0	186·0
1907	72·0	60·0	162·0
1908	68·0	52·0	99·0
1909	66·0	48·0	160·0
1910	65·0	50·0	137·0
1911	60·5	44·1	93·2
1912	56·4	37·1	107·1
1913	50·9	29·8	95·6

regimental institutes. The table shows the ratios per 1,000 per annum for venereal disease in the United Kingdom, Aldershot Command, and the London district respectively from 1885 to 1913. You will notice that all three show a steady decrease which was interrupted

by the South African War. The decrease is most striking in the case of the Aldershot Command, and I am sure that it is no mere coincidence that Aldershot, which was once a station where a soldier's only distractions were in the wet canteen and on the streets, has become a model station in its provision of healthy games and regimental institutes, and its general care for the soldier off the parade ground as well as on it. The London district has always shown a very high ratio, and I do not think there can be any doubt that it is because there is less to keep a man in barracks and more to tempt him on to the streets in London.

I suggest that much more might be done in the way of providing healthy distractions for civilian workpeople than is done at present. I cannot help thinking that if we concentrated on the provision of working men's clubs which were something better than pot-houses, places where men could have decent meals, accompanied or not by beer if they fancied it, where outdoor games were organized, and where men could be really comfortable in their leisure hours, there would be much less boredom and much less wandering about the streets. I am sure that boredom is responsible for more than enough venereal disease, and that if one could reckon up increased efficiency in terms of pounds, shillings, and pence the spending of very large sums of money in providing healthy distractions for the multitude would be a good business proposition.

I should like to devote the remainder of the paper to the more purely medical aspect of the question—the breaking of the chain of infection before it has become too well established. The task may be considered from the female and the male ends of the chain respectively, and the question arises which is the more hopeful one to attack. Obviously, that is the end on which to concentrate our greatest effort, without prejudice to any subsidiary attempt we make at the other. If one reviews the literature on the prevention of venereal disease, one finds much on the inspection and segregation of prostitutes, but comparatively little on measures which are applicable to men. Yet I am sure that it should be very much the other way about. When we have achieved all that has ever been proposed with regard to women, we shall have touched only the fringe of the subject. The proper inspection of women on a large scale is impracticable, and reliance on certificates of good health, based on such examinations as are practicable for the multitude, is reliance on a very frail reed. The safest plan in dealing with professional prostitutes is to act on the assumption that all are diseased, and to teach them how to prevent their conveying infection to the men with whom they consort. I know that where this has been done the proportion of infections to intercourse with the women concerned has been less than 0·15 per cent., which compares with a rate of from 2 to 7 per cent. following exposures without precautions.

But even if we could make prostitutes safe by these means, we should be left with a perfectly hopeless class—the amateurs—who are responsible for quite two-thirds of all the venereal disease in this country at present. We might, perhaps, make laws designed to

prevent girls picking up men on the streets and in other public places, but who believes that they would be enforced effectively in this country, where the liberty of the subject is held in greater respect and defended more stoutly than in any other? Altogether, without prejudice to any subsidiary effort we may make towards the segregation and treatment of women who are flagrantly diseased and towards the improvement of conditions in our streets and public places, I think it would be a mistake to devote too much effort to preventive measures applied to women.

I am sure that our greatest hope of exterminating venereal disease lies in the breaking of the chain at the male end, where the handicap is distinctly in our favour. A woman is probably infected by her first intercourse with a diseased man, because the conditions favouring infection—the protected situation in which the virus is placed—are ideal. In the case of a man, it is quite different. On a conservative basis, one could calculate that at least half the sexual intercourses of men out of wedlock are with diseased women; yet the highest percentage of infections without exposures has been put at 7·4 per cent. Personally, I think that, all the world over, 2 to 3 per cent. would be nearer the mark. Allowing, however, a risk of 7·4 per cent. and half the intercourses with diseased women, the risk of infection from intercourse with a diseased woman works out at about 6 to 1 against. As I mentioned, I think that the chances against infection are greater, but even a risk of 6 to 1 shows that natural agencies operate heavily against the gonococcus and the spirochæta pallida, when they are planted on the male genitals. The reason is not far to seek. The gonococcus and the spirochæta pallida are the most delicate organisms in existence; they are planted on an exposed situation, and easily liable to removal by urination or ordinary ablution. When natural agencies are assisted by the prompt application of antiseptics, it is easy to prove that the chances of infection can be reduced to an infinitesimal amount. In support of this, I should like to quote some statistics.

In the American Army, men who contract venereal disease, without having taken the precaution to be disinfected after exposure, are punished; concealment of venereal disease is checked by frequent medical inspections. The result is that they are collecting most valuable evidence of the value of prompt disinfection. I am indebted to Colonel Walker, U.S.M.C., for the following two instances. In one group, 2,426 exposures to venereal infection were dealt with by disinfection within an hour and a quarter of exposure, and were followed by two infections. At a 2 per cent. risk one would have expected 48 cases from this group. In another group, for reasons which I need not detail, they experienced considerable trouble not only over the amount of promiscuous intercourse but over the neglect of the men to undergo subsequent disinfection. The exposures were easily 100 per cent., and the venereal rate was 720 per 1,000 per annum. Compulsory disinfection was introduced and every man who went out on pass was disinfected, on return, whatever he might say about exposure whilst out on pass. In this group of 3,600 men the infections

were reduced at once to 10 per 1,000 per annum.

The disinfection applied is this :—

(1) Thorough washing with soap and water.
(2) Washing with perchloride of mercury solution.
(3) Injection into the urethra of 2 per cent. protargol or 10 per cent. argyrol, which must be retained for three minutes.
(4) Inunction of the parts with 30 per cent. calomel ointment.
(5) Wrapping of the penis in toilet paper, which is kept on for four hours.

One of the most valuable illustrations of the comparative value of disinfection applied at different periods after exposures is this table published by Riggs, which will be found in Dr. Otto May's book on *The Prevention of Venereal Disease*. It illustrates the experience at the Naval Station, Norfolk, Virginia, during the years 1915–17, and shows well that to be effective the disinfection must be prompt. You will notice that out of the 5,103 men who exposed themselves to infection 1,180 were treated within an hour, and only one lesion resulted. Even this seems to have been more of the nature of a chemical artefact than a venereal infection, for the sore healed in a couple of days. As the period between exposure and disinfection increased, the percentage of infections rose. The jump after four hours is particularly noticeable, and it is clear from this table that it is useless to wait for ten hours. The importance of promptitude over the disinfection has been proved also by the experience of the American Army in France, where Colonel Hugh Young relates that in one battalion, where all-night passes were freely issued, the venereal rate was three times as high as in a neighbouring battalion where men were required to be back by night. In the first case, there was, of course, a delay of several hours before the disinfection.*

TABLE SHOWING THE EFFECT OF DISINFECTION AT VARYING PERIODS AFTER EXPOSURE TO VENEREAL INFECTION. (EXPERIENCE RELATED BY RIGGS, AT THE NAVAL STATION, NORFOLK, VIRGINIA.)

Number of Hours after Exposure when Disinfection applied.	Number of Men disinfected.	Number of Infections.	Per cent. of Infections.
1	1,180	1	0·08
2	1,172	7	0·59
3	521	4	0·77
4	330	2	0·61
5	199	3	1·57
6	321	5	1·58
7	277	6	2·27
8	390	16	4·22
9	283	10	3·62
10	214	11	5·14
more than 10	216	16	7·4
Total - -	5,103	81	1·58

* Young, Lt.-Col. H., U.S.M.C., *The Medical Bulletin*, published by the American Red Cross Society in France; May 18, p. 512.

The evidence from our own Armies is necessarily not so precise as that which I have just quoted, owing to the difference of the conditions under which we are attacking this problem, but I should like to give two examples of the good effect of early disinfection, which support the facts I have already related.

Major Falconer Brown, N.Z.M.C., who is in charge of the New Zealand Venereal Hospital, related to me the following:—New Zealand ships bringing reinforcements to this country used to touch at Capetown and the men were allowed to go ashore fairly freely. The result was that each trooper used to land in England anything from 15 to 20 cases of venereal disease. On one voyage, Captain Mackenzie, the Medical Officer in charge, lectured the men on the importance of early disinfection after sexual intercourse. A large number of men took his advice as to the disinfection, and he landed without a single venereal case.

In the British Army, it is only quite recently that disinfection has been taken at all seriously by the majority of medical officers. The system has now been reorganized, and men may have on application to the medical officer or his orderly the means for disinfection after illicit intercourse. The means provided are—

(1) A small bottle of 1/1,000 permanganate of potassium with which to swab the parts.

(2) A small piece of cotton wool for use with the permanganate.

(3) A small tin tube containing calomel cream in two consistencies.

The first portion to ooze out when a pin is pushed through the nozzle of the tin capsule is semi-fluid and intended for injection into the urethra; the second portion is more solid and intended for inunction of the parts. The strength of calomel in both is the same—30 per cent.

Recently 2·5 per cent. thymol has been incorporated in the cream, because our laboratory experiments appear to confirm the statement that thymol makes the ointment more bactericidal. The system has been in use for such a short time throughout the Army that results are rather meagre at present, but in one London barracks the calomel capsules have been used extensively for over two years, at first in conjunction with the voluntary irrigation with permanganate of potassium which we established in 1916 and have now abandoned, and, since April this year, without the irrigation. The experience is shown in this table which gives the annual ratio of admissions for venereal disease per 1,000 per annum for the London district for 1913 (the last year for which it is available), and for this particular barracks for successive periods since January, 1916. You will notice that, although the irrigation was abandoned in April, it seems to have made no very appreciable difference to

the ratio.

TABLE SHOWING THE RATIOS PER 1,000 PER ANNUM OF ADMISSIONS FOR VENEREAL DISEASE FROM (*a*) THE LONDON DISTRICT IN 1913, AND (*b*) —— BARRACKS DURING SUCCESSIVE PERIODS FROM JANUARY, 1916 TO SEPTEMBER 30, 1918.

Station and Period.	Ratio of Admissions for Venereal Disease per 1,000 per Annum.	Remarks.
London District, 1913 -	95·6	
—— Barracks :—		
January to June, 1916	89	Energetic early treatment campaign begun in May.
July to December, 1916	37	
January to June, 1917	52	
July to December, 1917	35	
January to June, 1918	44	Voluntary irrigation abandoned and reliance placed only on capsules from April, 1918.
July to September, 30, 1918.	42	

In a neighbouring barracks of about the same average strength in men, the rate has by similar methods been reduced from 112 per 1,000 in the first half of 1916 to 50 per 1,000 during the last quarter. Absolutely the rates are still high, but a comparison with the rates for the London district shows an enormous improvement in these two barracks, which total 2,000 to 3,000 troops. Most of the infections are now happening to men on leave, when means of early disinfection are not available.

I do not need to say more to convince the reader that in early disinfection we have a most hopeful means of eradicating venereal disease. The ideal method is undoubtedly that in which the man submits himself to treatment by a skilled attendant within an hour of exposure. But promptitude is vitally necessary to success, and if the man is situated where he cannot obtain skilled assistance, he should have the means of self-disinfection with him. I hope before the Army is demobilized, that we shall have taught it by successful early treatment how to protect itself against venereal disease.

I should like now to consider a second line of defence which we have against the more prevalent of the two main venereal diseases—gonorrhœa.

It has been shown by numerous workers that, if a man will apply for treatment on the very first day of an attack of gonorrhœa, the disease can be aborted in 90 per cent. of cases in ten days or less. The means usually adopted consist in the injection into the urethra of solutions of such organic silver salts as argyrol, silver nucleinate,

or protosil for a few days in succession. The Australian Medical Service have in this way saved many thousands of admissions to hospital for gonorrhœa, and the results which we have obtained at Rochester Row, though on a much smaller scale, substantiate the claims of other workers that, in the abortive treatment of gonorrhœa, we have a most valuable asset to our campaign against venereal disease.

Considering the success of the abortive treatment it is clear that, in those cases in which men have delayed disinfecting for a number of hours after exposure, the best plan is to treat them by the abortive method, that is to repeat the injections into the urethra for a few days in succession.

The next problem is the application of early and abortive treatment to the civil community. I do not think there should be great difficulty about providing the facilities, if we only make up our minds that it has to be done. In my earlier address, I pointed out that, for the continued treatment of gonorrhœa, it would be necessary to provide subsidiary centres where men could go and irrigate themselves after being taught to do so at the central clinic, and women could be attended to by nurses, in each case following the prescription of the clinical medical officer. I suggested the plan of arrangement shown on a diagram. These subsidiary centres could perfectly easily be used as well for the early treatment, and if a junior medical officer, or a dresser, was in attendance night and day, the abortive treatment of gonorrhœa could also be carried out. It is not necessary to discuss here the details of procedure. So long as we are agreed on the main principles, the details are a simple problem.

I hope I have succeeded in convincing you that venereal disease is likely to prove a serious matter for the nation unless it is combated energetically, but that in the universal application of early and abortive treatment we have a medical means of eradicating it. To secure this universal application, we must have the co-operation of the public, and it is the duty of the medical profession above all to secure this co-operation by education. The combating of venereal disease concerns every one of us. It is useless simply to deplore the scandal, and feebly wonder why somebody does not do something more to stop it. The something more will be done when a sufficiently large number of us have agreed on the main principles, stopped splitting straws over details, and made up our minds that it *shall* be done.

THE PROPHYLAXIS OF VENEREAL DISEASE.

By C. F. MARSHALL, M.Sc., M.D., F.R.C.S.

The evil effects of venereal disease on the individual and on the race, and the economic loss to the State caused thereby, have long been known. More recently, this subject has attained greater publicity owing to the report of the Royal Commission on Venereal Diseases and the propaganda of the National Council for Combating Venereal Diseases, and has been brought into further prominence by the loss of effectives in the war caused by the constant invaliding of soldiers suffering from these diseases.

I propose to discuss the different measures which have been suggested or adopted to check the spread of venereal diseases, and to arrive at some conclusion as to their relative efficiency. These measures may be divided into three classes: moral, legislative, and medical.

MORAL, OR IDEALISTIC MEASURES.

Moral measures in the campaign against venereal disease are necessarily bound up with the whole question of promiscuous, or extra-marital, sexual intercourse. Moral and religious instruction in the past has not succeeded in abolishing sexual promiscuity, although it has no doubt done much to diminish it. At the present time there are obvious signs of an increase in promiscuous sexual intercourse, owing to the social conditions caused by the war, which have brought the sexes together in a manner unprecedented. We do not know how or when venereal diseases originated, but we do know that where sexual promiscuity exists venereal disease almost inevitably follows. Even if these diseases were ever stamped out, it is probable that they would arise again *de novo* if sexual promiscuity persisted. In order, therefore, to institute a successful campaign against venereal diseases by moral or idealistic measures it is first necessary to abolish extra-marital sexual intercourse, a proposition which in the present state of civilization is impracticable.

Connected with the moral or idealistic campaign are educational measures to instruct the public as to the dangers of venereal diseases and to dispel the idea that sexual continence is harmful. These measures were strongly recommended by the Royal Commission, and have been carried out to a large extent by the National Council for Combating Venereal Diseases by means of lectures, pamphlets, and even articles in the Sunday papers. It is doubtful if these propaganda will have much effect in diminishing sexual promiscuity, although they may lead to more careful circumspection. In the majority of people, the sexual instinct is stronger than the fear of venereal infection.

Another question arising out of the moral campaign is that of

alcohol. It has been often stated that the restriction or prohibition of the sale of alcoholic drinks would lead to a considerable decrease in venereal infection. The association of Bacchus with Venus is ancient history, but whether the recent restriction on the sale of alcoholic drinks and the reduction of their potency has had much effect in this direction is at present uncertain. However, there is no doubt that a man under the influence of liquor will be less careful in carrying out the prophylactic measures to be considered later.

LEGISLATIVE MEASURES.

Legislative measures in the campaign against venereal diseases include (1) notification; (2) regulation of prostitution; (3) suppression of quackery, and other provisions in the Venereal Diseases Act of 1917. As regards *notification*, it is first of all doubtful whether the incidence of infectious diseases such as scarlet fever, diphtheria, etc., has been appreciably diminished by notification. The reason for this lies in the fact that the most infectious period is generally the early stage before notification has taken place. During this period the disease is spread. This applies to venereal diseases also, in which syphilis and gonorrhœa are often transmitted before the chancre or the urethral discharge has led the patient to seek advice. Indeed, in the case of women the chancre is frequently not noticed, and gonorrhœa often causes so little discomfort that they may transmit these diseases for weeks or months before they are aware that anything is wrong with them. Secondly, the notification of such diseases, which are in the great majority of cases contracted by extra-marital intercourse, would inevitably lead to unpleasant consequences for the medical man, unless he was specially protected against an action at law. Lastly, notification would be useless unless followed by compulsory segregation during the whole period of infectiousness, a proposition which would be impracticable under present social conditions.

Regulation of Prostitution.—This is still in force in some countries, but it is generally recognized that, as a measure for diminishing the incidence of venereal disease, it has proved a failure. The reasons for this are not far to seek. In the first place, it only applies to public prostitutes and does not affect the class of women who practise clandestine prostitution, nor those who lend themselves to sexual promiscuity. At the present time, at any rate, if not normally, the last two classes greatly outnumber the first. Moreover, they constitute the chief sources of infection. In a venereal hospital in London, out of 100 consecutive cases in which the source of infection was traced, only 28 were from regular prostitutes, the rest from amateurs.* Secondly, the medical inspection of prostitutes in brothels, or "maisons de tolérance," which form part of the system of regulation, is totally inadequate to guarantee that any woman is free from infection. Even a bacteriological examination or a Wassermann test will not detect the presence of gonorrhœa or syphilis in the incubation stage, and the disease may manifest itself before the next

* Quoted from E. B. Turner: *Brit. Med. Journ.*, February, 1918.

medical inspection. Thirdly, a woman may act as a "carrier," at any rate in the case of gonorrhœa, without being herself infected.

The Suppression of Quackery.—The Venereal Diseases Act of 1917 provides: (1) that only duly qualified medical practitioners may undertake the treatment of venereal disease; (2) that no advertisement of any preparation purporting to prevent, cure, or relieve any venereal disease shall appear in the Press or be sent by circular. As an example of the easy way in which this Act can be evaded, I may mention the continued advertisement of a well known "blood mixture," which, although it is not openly advertised as a cure for venereal disease, contains iodide of potassium and is frequently resorted to by the victims of syphilis. With true irony, this advertisement appears in the Sunday papers almost alongside the propaganda of the National Council for Combating Venereal Diseases!

MEDICAL, OR PRACTICAL MEASURES.

These comprise: (1) increased facilities for diagnosis and treatment, including better instruction of the medical profession in venereal diseases; (2) early abortive treatment; (3) personal prophylaxis.

The chief practical outcome of the recommendations of the Royal Commission was the establishment, by the Local Government Boards of England and Scotland, of numerous centres where patients could be treated by "salvarsan or its substitutes" free of charge. Many of these centres have now been in working order for some time; some at the large teaching hospitals, others at smaller hospitals. This scheme of *prophylaxis by treatment* was influenced originally by an exaggerated idea of the curative effect of salvarsan at a time when the medical profession were still under the hypnotic influence of German Kultur. It is now known that the details of the manufacture of salvarsan (which is a derivative of atoxyl) were kept secret, and that this drug was protected and sold at an exorbitant price, not for the benefit of the victims of syphilis, but for the commercial profit of Germany. If these facts had been known at the time, salvarsan would not have met with such an enthusiastic reception. Nevertheless, it has been shown to have a remarkable therapeutic action in syphilitic lesions, but whether syphilis can be cured by salvarsan alone is another question—which is difficult to prove. The Wassermann reaction as a test of cure is inconclusive. The only real proof of cure is the fact of reinfection. A good many cases of reinfection after salvarsan have been published, but many of these are of doubtful genuineness; most of them had been treated by mercury as well, and many were published by Germans, whose word is now suspect, even in science. On the other hand, not a few genuine cases of reinfection have been recorded after mercurial treatment. There is no need to pursue this subject further, all that I wish to emphasize is the exaggerated view formerly held, and still held by some, of the miraculous cures effected by this new drug, which led to the idea of *prophylaxis by treatment.* But there is no evidence that any disease was ever eradicated by treatment.

Early preventive or abortive treatment.—This consists in the

provision of facilities for irrigation of the urethra with permanganate of potash, and inunction of the penis with calomel ointment (see *infra*) as soon as possible after a doubtful connection. In March, 1916, this method was adopted by the Army Council, who issued a general order for its provision in all camps, barracks, and depôts, special " ablution rooms " being provided for the purpose. The Army Council have not, however, looked favourably on the provision of prophylactic outfits to be carried by men before exposing themselves to possible infection. The National Council for Combating Venereal Diseases takes the same standpoint. They regard it as right for a man to carry out measures to abort a possible infection after the event, but wrong to carry out measures to prevent such infection before the event. This appears to be an ethical distinction without a difference. Statistics published by Dr. Riggs, Medical Inspector of the U.S. Navy, based on over 5,000 cases, show that the efficacy of abortive treatment depends on its early application. When used within an hour of exposure the percentage of infection was only 0·08, but this increased with every additional hour. Hence the " ablution " rooms are of little value unless almost immediately accessible. Naturally, this is not often the case in the Army, expecially with men on leave or in billets; moreover, in many camps they do not exist. A more practical measure, therefore, would be the issue of prophylactic outfits.

PERSONAL PROPHYLAXIS.

When Metchnikoff, in his Harben lecture in London in 1906, advocated artificial prophylaxis against syphilis, a new era dawned in medical ethics. The subject of venereal disease, hitherto considered taboo, was brought prominently before the notice of the public and freely discussed in the Lay Press. It may be remembered that in 1906 Metchnikoff and Roux, after their failure to obtain an attenuated virus for prophylactic inoculation against syphilis, tried the preventive effect of a 33 per cent. ointment of calomel in lanoline. They found that this ointment, when rubbed into the point of inoculation of the syphilitic virus in a macacus monkey an hour after inoculation, prevented the development of the chancre, while another monkey inoculated with the same virus developed a chancre in due course. The experiment was repeated on a medical student whose personal and family history were guaranteed free from syphilis, and no chancre or secondary symptoms followed. This ointment was found to be ineffective twenty hours after the time of inoculation. It is necessary to mention that these experiments, when repeated by others, did not always prove successful in preventing the development of the chancre. However, Metchnikoff's ointment soon became widely used as a prophylactic measure against syphilis, and formed the principal weapon in prophylactic outfits.

These *prophylactic outfits* have for some time been in use in the American Army and Navy, and in the British Navy, but not in the British Army, in which " early treatment " is advised, but true prophylaxis is not countenanced. These outfits comprise calomel ointment

as a prophylactic against syphilis, and some preparation, such as argyrol, protargol or nargol in the form of jelly, or permanganate of potash or perchloride of mercury in solutions against gonorrhœa. These agents are contained in collapsible metal tubes, and issued to men going on leave, with directions for use. By these measures the incidence of venereal disease in the Navy is said to have been greatly reduced.

Although personal prophylaxis is the best safeguard against venereal infection, it must be borne in mind that it is not infallible, even when properly carried out at the earliest possible moment. The chief reason for this is that the point of inoculation of the syphilitic virus is not infrequently on some other part than the penis, or altogether extragenital. Fournier estimated that ·10 per cent. of all chancres are extragenital. Obviously, prophylactic measures applied to the penis will not prevent the development of a chancre on the lips. Even the well-known "condom" is not infallible; it will not prevent extragenital infection, and it may fail to prevent genital infection, either through bursting, or some faulty manipulation.

The chief argument brought against the provision of prophylactic outfits, and the one presumably upheld by the Army Council and the National Council for Combating Venereal Diseases, is that these measures would, by offering apparent security against infection, lead to more widespread sexual promiscuity and, no method being infallible, in the long run result in a greater number of venereal infections. We have already seen that there is no real ethical distinction between personal prophylaxis and the early abortive treatment which is accepted by the above Councils. Moreover, the same objection might equally well be urged against the system of free treatment. The provision of free treatment for diseases which are, in the great majority of cases, caused by sexual promiscuity, is certainly a measure of questionable ethical soundness.

CONCLUSIONS.

From an impartial survey of the above considerations I think we must conclude that there is no measure suggested or adopted in the campaign against venereal disease which is infallible. Education and moral persuasion of the public are important in many respects. At any rate, all adults should be acquainted with the dangers of venereal diseases; but to what extent this knowledge will diminish the incidence of these diseases is problematical. Legislative measures, as we have seen, have so far not proved very successful. The measure which offers the greatest prospect of success, and which in many instances has given encouraging results is that of personal prophylaxis. At some future time, perhaps, protective inoculation may be carried out, as in small pox and enteric; but, so far, experiments in this direction have failed, and we must be content with the less scientific methods at our disposal.

VENEREAL DISEASES AS WE SEE THEM TO-DAY.

By J. E. R. McDONAGH, F.R.C.S.

Surgeon, London Lock Hospital; late Hunterian Professor, R.C.S.

In my article this year, I shall first of all attempt to describe my theory of oxidation and reduction in as simple a manner as possible, then refer to its reception and confirmation, and finally to its execution, from a chemotherapeutic standpoint, in syphilis, soft sore, and gonorrhœa, with a brief reference to its application in skin diseases, and especially in mustard-gas poisoning.

THEORY OF OXIDATION AND REDUCTION.

Infection is a battle between the host and the organism invading it; therefore, there are two sides which require investigation. The organism is a mass of colloidal particles enclosed in a fixed area. For maintenance it is dependent upon oxygen, which it strives to gain and protect, and of which when deprived it dies. The protective substance of the host, *i.e.*, the material employed to fight the organism, is the blood-serum, which consists of colloidal particles moving about in a fluid medium, which is on the alkaline side of neutrality. The fight between organism and protective substance is one fought on the surface of the colloidal particles for the main oxygen supply. The oxygen referred to exists probably in the form of hydroxyl (OH′), which has a negative electric charge, and is alkaline. The formation and regulation of this oxygen is dependent on metals, especially on those which are capable of existing in two easily reversible hydroxide forms. The chief metal which regulates oxidation in animal life is iron, and in vegetable life manganese. Both these metals can exist as OH_2 and OH_3, the latter being changed to the former by the action of hydrogen.

$$Fe(OH)_3 + H = Fe(OH)_2 + H_2O.$$

It appears to be only the OH_2 which has the power to form oxygen, and then only in the presence of a peroxide—

$$\underset{\text{Peroxide.}}{Fe(OH)_2 + HO.OH} + H.OH = Fe(OH)_3 + H_2O + \underset{\text{Oxygen.}}{OH'}$$

In every colloidal system the two electric charges exist, and the positive charge which concerns us is that borne by hydrogen (H′), an excess of which makes the blood too acid and reduces oxygenation. The formation and regulation of hydrogen is dependent on non-metals, especially sulphur, which, existing as a sulphide (S_2) and in the presence

of water, forms both hydrogen and peroxide—

$$S_2 + 2H.OH = S + \underset{\text{Mercaptan.}}{SH} + \underset{\text{Peroxide.}}{HO\,OH} + \underset{\text{Hydrogen.}}{H'}$$

The organism to protect its oxygen exhibits on its surface a prevailing positive charge, *i.e.*, there is an excess of H′ over OH′. When the organism gets into the host, the question whether it can become implanted and cause an infection or not, depends for one thing upon the OH or negative charge of the serum. If the charge is normal or in excess, the hydrogen on the parasite becomes neutralized and destroyed. If the hydrogen is destroyed, the organism is then incapable of converting its non-active metallic hydroxide into the active form, which may so lessen the amount of oxygen produced as to cause the death of the parasite. If, on the other hand, the OH met with in the serum by the organism is below normal, the latter will gain the upper hand, become implanted and so cause an infection. Alcohol makes the blood too acid, and depresses the OH to below normal; this is the explanation for gonorrhœa being so readily contracted when the patient is under the influence of drink. Once the organism has become implanted, the host not only attempts to increase its oxygen but also to build up its colloidal particles so as to approach as nearly as possible the structure of those of the organism. The object of the latter action is to increase the surface reaction (adsorption), or, in simile, to intensify the battle on the two fronts. We can increase the amount of oxygen by the administration of metals, and the surface action by using them in a colloidal form.

If a drug is used in the colloidal form, or has amino-groups (NH_2) in its molecule, such as arseno-benzene, or has a high atomic weight, such as mercury, it breaks up the colloidal particles in the serum into several smaller ones. This has the result of increasing the area of the surface exposed to the parasite, and is equivalent to using soldiers spread about instead of in massed formation. As there are more colloidal particles in the serum from a case of syphilis than from any other disease, the reader will at once grasp the reason why arseno-benzene and mercury should be useful. As arsenic is not a good oxidizing metal, it can be seen there is every reason to suppose, that an amino-compound of iron or manganese would prove its superior. Mercury acts almost entirely in virtue of its atomic weight, and can be replaced by other metals of a like or of a higher atomic weight. From these few words two conclusions may be drawn: (1) drugs are not specific, (2) drugs do not attack the organisms directly, but only indirectly, by increasing the action of the host's protective substance.

If all this is as written, the question may readily be asked: How is it that, in spite of giving several injections with the object of increasing the formation of oxygen, the patient is practically never cured, and in some cases made worse? To this there is a triplicate answer: (1) To bring about a never-failing cure it will be necessary to synthesize a compound, which not only contains a metal, but has a structural formula homologous to that of the organism; (2) too

continued a use of an oxidizing agent may lead to its own oxidation; (3) too continued a use of a metal destroys the available peroxide.

Let us for a moment consider No. 2. Manganese instead of acting as in this formula and producing oxygen (OH)—

$$Mn(OH)_2 + HO.OH + H.OH = Mn(OH)_3 + H_2O + OH'$$
Oxygen

may act in this manner :—

$$Mn(OH)_2 + HO.OH + H.OH = Mn(OH)_4 + H_2O,$$

whereby not only is no oxygen formed, but the host has actually been deprived of some, since the $Mn(OH)_4$ quickly forms manganous acid—

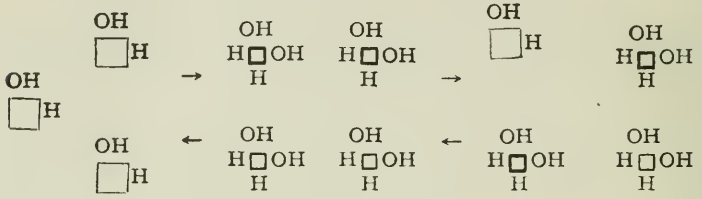
$$Mn(OH)_4 = MnO(OH)_2 + H_2O.$$

This is evidence, then, that metals improperly employed make the blood too acid and depress oxygenation. When mercury does so, we have stomatitis, enteritis, nephritis, and neuritis; in the case of arsenic, we have dermatitis, nephritis, hepatitis, neuritis, enteritis, and stomatitis; lead causes enteritis, neuritis, nephritis, and stomatitis; bismuth gives rise (in rabbits) to enteritis, nephritis, and hepatitis; and manganese sets up urticaria, muscular rheumatism, and slight stomatitis. Seeing that the continued use of metals uses up the available peroxide, and that their formation of oxygen is dependent upon its presence, it might be expected that the administration of a peroxide-former would prevent metals from producing toxic symptoms, and would cure them if already in being. Furthermore, since the action of a metal is enhanced by the other groups in the compound, especially the amino-groups, it will at once be clear why, in the first place, I have advocated sulphur, and in the second place introduced intramine, which is an amino compound of sulphur (di-ortho-amino-thio-benzene). As the condition (destruction of peroxide) produced quickly by over-treatment with metals is that produced slowly by time *in corpore*, the reader will understand why intramine should precede the use of metals in the chronic stages of an infection. As a ratio exists between the kind of infection and the output of protective substance elaborated by the host, being small if the infection is only local and big if it is general, greater care in the use of oxidizing agents is called for in the former case and more striking results are to be expected in the latter case.

This theory of oxidation and reduction is applicable not only to chemotherapy, but to staining [2] and the realm of immunology.[2] The action of dyes does not immediately concern us, but there are one or two problems connected with immunity which may, with advantage, be here explained. The Wassermann reaction [1] will be considered first, and then anaphylaxis or shock.[2, 3(b)] In the first half of the Wassermann reaction we have three factors : (1) antigen, (2) complement, (3) patient's serum, and in the second half two : (1) amboceptor or a non-specific colloid, (2) sheep's red blood corpuscules. All these five ingredients are colloids. The antigen is a colloidal suspension in which the particles are not heavily charged with salts (ions). Complement

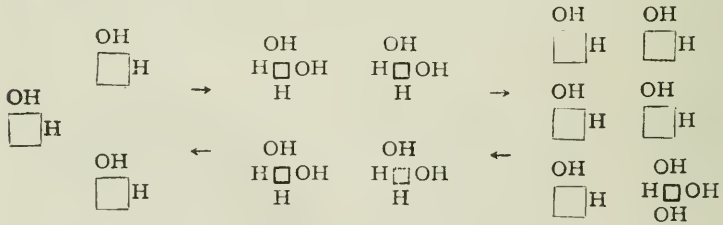
corresponds to the colloidal particles in a fresh serum from a guinea-pig, which do not differ from those found in fresh serum withdrawn from a normal person. The patient's serum is heated first (inactivated), which deprives the particles of some of their salts. Colloidal particles which are poor in adsorbed salts will attract or be attracted by those rich in salts in an attempt to produce an equilibrium.

This can be shown diagrammatically as follows :—



Antigen. Complement. Normal patient's serum.

Antigen is represented as consisting of three large particles, each failing an H and OH. Complement is represented as four particles of the same size equally charged with H and OH. In a normal patient's serum there are also four particles, three of which are the same size as those in the complement, but one is bigger, as it has lost an H and OH in the inactivation. When these three are left together an equilibrium will be brought about at the expense of the complement, which will have to adjust its normal supply of H and OH to meet those wanting in the antigen and patient's serum. The balance will result in half of the complement being destroyed, but nevertheless there will be some left over for the second half of the experiment, in which the red blood corpuscles take the place of the antigen and the amboceptor the place of the patient's serum. This production of equilibrium produces a change in the surface tension, with the result, that the hæmoglobin escapes from the red blood corpuscles (hæmolysis). This is what happens with a syphilitic serum—



Antigen. Complement. Syphilitic serum.

Owing to the increased number and size of the particles in the syphilitic serum, all the complement will be destroyed. The adsorption between the various particles produces precipitation, an effect

which carries with it the particles of the amboceptor and the red blood corpuscles in the second half of the experiment, with the result that no hæmoglobin escapes. As there are so many factors at work, which influence the size and number of the colloidal particles in both a normal and a syphilitic serum, the justification does not exist to regard a positive Wassermann reaction as more than a presumption, that syphilis has been contracted at some time or another. The reason why the reaction becomes negative after treatment is due to the fact, that metals in the colloidal form break up the large particles into small particles and these into smaller still until some cease to be colloidal particles and go into true solution; a state may, therefore, be reached not differing from that existing in a normal serum. If a positive serum can be obtained just as it is becoming negative after the administration of metals, an injection of intramine will sometimes make it positive again, because it supplies the requisite ions to bring back some of the particles, which had gone into true solution, again into the colloidal form, in which form only can they exert a protective action. Three important points can be learned from this: (1) that a combination of metals and non-metals is necessary for ideal treatment; (2) that the whole action of treatment is on the protective substance; (3) that the Wassermann reaction as a gauge of cure or of the efficacy of a treatment is not to be relied upon.

Anaphylaxis, shock, allergy, hypersensitiveness, reaction following vaccines, etc., are all words for one phenomenon, and one which occurs *in corpore* (*in vivo*), as I have already described under the Wassermann reaction as taking place *in vitro*.[35] When the change is slight, only a portion of the complement is destroyed; when severe enough to cause death, the complement may be completely destroyed. As death with the destruction of complement may be caused by a drug with a positive or negative charge, and as life may be saved if a drug of the opposite charge to that producing death is injected quickly enough, the assumption may be drawn, that complement is the balance between the two electric charges, or the stage of electrical equilibrium. As the two chief groups concerned are the OH′ and H′, which possess a negative and positive electric charge respectively, complement is the balance between OH and H, or in other words, the normal hydrogen ion concentration of the serum. Therefore, complement is not a concrete substance, but a state.*

Most substances which produce shock destroy oxygen and so raise the hydrogen ion concentration, which is the same as saying, they make the blood too acid, but not in all cases is the antidote the same. I will take some various types as examples. Metals destroy oxygen both by using up the available peroxide and by becoming themselves oxidized. The antidotes are colloidal iodine indirectly and intramine directly, as peroxide producers. Iodine produces peroxide indirectly by converting the mercaptan back into the di-sulphide or

* This statement makes the whole side-chain theory fall like a pack of cards, and is one of the chief causes of the opposition which my work has caused, because it is so simple.

active form of sulphur—

$$S_2 + 2H.OH = S + \underset{\text{Mercaptan.}}{SH} + \underset{\text{Peroxide.}}{HO.OH} + H$$

$$2SH + 2I = \underset{\text{Di-sulphide.}}{S_2} + 2HI.$$

Intramine and iodine are also antidotes for alcohol poisoning and various other unknown poisons, which make the blood too acid—a condition responsible for many chronic skin diseases,[5] asthma,[3(b)] etc. Di-chlor-ethyl sulphide[7, 10] (mustard-gas) also makes the blood too acid, for it raises the hydrogen ion concentration; but in so doing it increases, in virtue of its sulphur content, the supply of peroxide. Metals, therefore, are the antidotes, and of these, up to the present, colloidal manganese has proved the most useful.[7, 10] Proteins raise the hydrogen ion concentration, but the rationale is more complex, for adsorption plays a greater part in the shock produced; therefore, we have only indirect antidotes, such as intramuscular injections of pituitrin, adrenalin, and camphor, and intravenous injections of a mixture containing calcium chloride, glucose, and gelatin.[3(b)] These means are aimed at raising the blood-pressure, which quickly falls in shock, and at increasing the stability of the permeability of the colloidal particles in the serum, in the hope of preventing them giving off too many adsorbed ions, which results in their increasing in size and becoming precipitated. (*Vide* and compare precipitation and no hæmolysis with a serum giving a positive Wassermann reaction.) If shock is usually due to the blood becoming too acid, where is the need for the various antidotes above mentioned, when sodium bicarbonate, if used in sufficiently big doses, will render the blood alkaline? In the serum there are two parts, as in all colloidal systems: (1) the solid part, or the protein colloidal particles, called the internal phase; and (2) the fluid part, called the external phase. Shock is a condition brought about by a change of the internal phase. Sodium bicarbonate is not a colloid, and therefore mainly influences the external phase, which only plays an indirect or subordinate part. Therefore, in acute and severe cases of shock, the antidote must be a colloid, so as to right in the quickest manner possible the wrong produced in the internal phase. Only in chronic, and therefore in mild, cases of shock (chronic eczema, exfoliative dermatitis, etc.) is much to be gained by the injection or ingestion of sodium bicarbonate.[5] After all, this is exactly what happens in the ætiology of shock. Practically speaking, only colloids can produce shock; while, comparatively speaking, a great excess of non-colloidal alkali or acid can be injected with impunity.

RECEPTION AND CONFIRMATION.

In order to deal with this subject, it will be necessary to survey the views held before the advent of the oxidation and reduction theory. The main views were three: (1) that the spirochæta pallida was the sole cause of syphilis; (2) that a positive Wassermann was

indicative of active syphilis, and was a complement fixation test based on the side-chain theory; (3) that the action of chemotherapy was a direct one upon the organism attacked. To these three points I have already given the name of German syphilitic trinity, but it was more than this, for it was a vicious circle as well, I mean, that nothing was allowed to enter or leave the circle unless agreed upon by the founders of the trinity. Many of the views circulated by these founders were not held by them, but no other course was open, owing to the spell they had cast over the medical world. Take, for instance, the side-chain theory, which is nothing more than a concatenation of coined words, but popular, in that it is incomprehensible, mysticism still appealing more to human nature than simplicity. Add to this that the *Leucocytozoon syphilidis*, the rationale of the Wassermann reaction, and the theory of oxidation and reduction did not originate from abroad, and were not introduced by a luminary of an institution into this country, and the reason is clear why, in the first place, I was advised to give up my views, and why, in the second place, a titular head of one of our great organizations, quoting from a well-known physiologist, referred to the oxidation and reduction theory as a physiological nightmare, and why, in the third place, obstacles have been placed in my way of furthering my views and of putting their practice into execution.

In spite of this, we seldom read now of arseno-benzene killing the spirochæta pallida directly, and it has been suggested more than once in print, that this organism has some other phase. For three years intramine has been condemned more than any other drug, although its utility surpasses most others. In certain quarters, suggesting intramine for arsenical poisoning was like exposing a red rag to a bull. There would be no objection if any other treatment existed to alleviate the terrible suffering patients have to undergo, but until the introduction of intramine there was no remedy available. We now find the mention of intramine in an Army Order. Owing to the application of chemotherapy to gonorrhœa, the suggestion of using intramine in syphilis has lost its sting, for all the venom is now employed to decry the value of pallamine, colloidal manganese, and intramine in gonorrhœa and its complications. For arsenical poisoning we find that sulphur, internally, and colloidal sulphur, intramuscularly, are advised, both of which are valueless, and also the intravenous injections of typhoid vaccine advocated instead of intramine for gonococcal arthritis. It is interesting to note, that sulphur and colloidal sulphur were not employed until intramine had been in use for two years. Typhoid vaccine was advocated in the belief that intramine was beneficial only in virtue of its being able to cause a rise of temperature. In the first place, it is equally useful when no rise of temperature occurs, and in the second place if the action of a drug depends solely on its ability to raise the temperature, why not employ typhoid vaccine instead of other specific vaccines, or arseno-benzene, or practically any other powerful drug? This not only confirms the value of intramine, but shows, that criticism is

not free from bias.

Medical history shows, that views stay, which come in with a storm, and *vice versâ*; therefore, as indirect confirmatory evidence of my work in venereal diseases, not much more is required. As direct confirmatory evidence we have (1) the American work on shock, which proves, that it is due to an upset of the normal hydrogen ion concentration; (2) the satisfactory results which have been obtained in chronic skin affections by the ingestion of large doses of sodium bicarbonate; (3) the many reports which now appear regularly in the medical journals upon the efficacy of intramine, pallamine and colloidal manganese in various acute and chronic infections.

SYPHILIS.

There are three rules generally laid down for the diagnosis and treatment of syphilis: (1) examine a sore for the spirochæta pallida; (2) treat if the Wassermann reaction is positive; (3) in the early stages, at any rate, continue treatment till the Wassermann reaction becomes negative. Before advising a routine examination of a sore for the spirochæta pallida, the examiner should clearly have in his mind (1) what to do in an undoubted case (clinical diagnosis) of syphilis when no spirochæta is found; (2) which examination is open to the greater error—(*a*) clinical, (*b*) microscopical. To avoid any bias, I had 100 consecutive cases of primary sores examined by a trained pathologist, and in 23 he failed to find the spirochæta pallida. I feel positive that a man who knew his clinical work and relied on a naked eye examination would not make so many mistakes. If the error is always as great as this, it means that over 20 per cent. of patients are allowed to enter the generalization stage, when a cure can never be guaranteed, before treatment is begun. To cite a case—

CASE 1.—A patient was admitted with a typical primary sore. On five different occasions examinations were made for the spirochæta pallida, and all were negative. Six weeks later a rash appeared, but before it was diagnozed two Wassermann reactions were done, the first being negative and the second positive. After 45 days had been wasted, the patient was put under treatment, and after three intravenous injections of 606, three intramuscular injections of 606, and five of mercury, the patient developed severe arsenical dermatitis and is not fit for duty yet, although more than a year has elapsed.

To treat a man who is, as far as one can say, clinically sound, merely because his Wassermann is positive, is in my opinion, not the best advice. A positive reaction tells you no more than that the patient presumably has had syphilis, and it certainly does not guarantee that he has active syphilis at the time; indeed, it may signify that his protective action against the disease is good. As the reaction will not discriminate, is one justified in running the risk of letting a sound man have his sheet anchor destroyed—an action which, I have already explained, treatment has?

In advising treatment to a sound man, it is logical to assume, that the adviser not only regards a positive reaction as indicative of

active disease, but also, that treatment will prevent symptoms from arising in the future. Is this second assumption justified? Experience has shown me that it is not, and I am convinced, that if a patient is going to develop a degenerative or vascular lesion in the central nervous system, treatment before clinical signs are manifest will not only not prevent or retard their onset, but in many cases will actually precipitate them. I have had several instances, of which the following is a typical case :—

Case 2.—Patient had syphilis six years ago, for which he was fairly well treated. At the end of 1917, possibly to avoid a draft, he told his M.O. that he had had syphilis. Although he was perfectly fit and ailing nothing, a Wassermann reaction was taken and proved positive. He then had eight injections of 606 and nine injections of mercury. One week after the last injection he had an attack of hemiplegia, from which he partly recovered. He then developed degenerative encephalitis (G.P.I.) and is now dead.

To carry on treatment until the Wassermann reaction becomes negative is undoubtedly sound advice. It is necessary, however, to know, if treatment is not prolonged for one to two years after the reaction has reached this stage, (1) how many cases relapse with a positive reaction, and (2) how many cases relapse with clinical symptoms.

To get some idea of the actual percentage of clinical relapses, for I had observed some years back that the majority of cases, which relapse with a positive reaction only, show no clinical symptoms, and those having clinical symptoms give a negative reaction, I examined 500 consecutive admissions of syphilis. The percentages were in round numbers as follows :—

Fresh cases, which had never been treated, 60 per cent.
Old recurrent cases, which had not had official treatment with 606 and mercury, 21 per cent.
Fresh recurrent cases, which had had official treatment with 606 and mercury, 19 per cent. (95 cases).

Of these 95 cases, the recurrence was most commonly a recurrent chancre or papule in the same site or in close proximity to the original sore, or mucous papules in the mouth. The recurrence most frequently made its appearance about the third month after the cessation of treatment. This is also the commonest period for the onset of the neuro-recurrences, which have been steadily increasing for the last few years. My critics say, that my experience as regards neuro-recurrences is unique, but if they will consult Dujardin's writings, they will see that he has had the same experience, and began to point it out as long ago as 1911.

A very large number of the neuro-recurrences are never diagnosed and get well without treatment, while the serious cases find their way to general hospitals and thus are not seen by those who treated them. This is exactly what happens with cases of arsenical nephritis and hepatitis (acute yellow atrophy), for which reason the syphilologist is apt to get wrong impressions of the number of cases which

develop toxic symptoms, as the result of too much arsenic and mercury or of too little intramine. The simultaneous use of mercury and arsenic undoubtedly increases the risk of toxic symptoms arising, and is a potent cause of some of the very bad cases of stomatitis and Vincent's angina, which are now so commonly to be met with.

A case of Vincent's angina due to 606 and mercury will begin to improve the same day an injection of intramine is given. To show how far short of perfection the so-called routine treatment of syphilis is, I took 200 consecutive admissions, and found that it was absolutely imperative to give intramine at once in 35 cases. These cases included stomatitis, Vincent's angina, albuminuria, arsenical jaundice, and dermatitis, recurrent chancres which would not heal with arsenobenzene and mercury, and late lesions, such as gummata, glossitis, etc., which were equally rebellious to these two last-named drugs. Most text-books state, that when the sore is single, the diagnosis of syphilis should be made, and when multiple of soft sore. To show the fallacy of this statement I have been through the notes of 1,000 consecutive cases of syphilis and find that in 27 per cent. there was more than one primary sore. In the last 100 cases of ulcus molle observed, I came across 15 which had only one sore. The routine treatment of syphilis in the army is, as is now well known, a course of 606 and mercury, with no continuous treatment afterwards. Of the syphilitic admissions, as I have already shown, 19 per cent. are relapses within a few months. Two questions now arise, which require the greatest attention: (1) what happens to the other cases which do not relapse early? (2) what effect will this treatment have upon the future course of the disease? It is too early as yet to answer these questions fully, but we have certain facts to go on and certain indications as to what is likely to happen, because the treatment now used since 1914 in the Army had been in vogue elsewhere since 1910. It is interesting to note that those responsible for the present treatment in the Army were its most bitter opponents when others introduced it. Rather more than 2 per cent. develop toxic symptoms, some of which are very mild; an unknown percentage is killed, and, therefore, the cases will doubtless be classed as cures; but most of the remainder will, in my opinion, recur sooner or later. I have recently seen a case which has opened my eyes somewhat, and if what I am now going to describe has happened in this case, what is to prevent it happening in every other case?

CASE 3.—A man had a primary sore on the corona in 1910. He had no rash or other symptoms, and the Wassermann reaction was negative. He was treated in Berlin, and received seven intravenous injections of salvarsan and an intramuscular injection of mercury weekly for two months. On six different occasions since the blood has been negative. In 1918 he came to me with a sore on the same site as the original. It was a typical chancre and a recurrent one. The question of a second infection could be put out of court.

Who would not have been justified in pronouncing this man as cured, had he examined him for that purpose between 1910 and 1918? My experience has been, that the majority of cases recur, and much

earlier than they did in the old mercurial days, if continuous or intermittent treatment is not given for one to two years after the completion of the official course. It is also my opinion, that the nervous lesions, which one had hoped so much would have been relegated to the past by the new treatment, are not only more frequent but set in earlier than was formerly the case. The single course treatment is undoubtedly a brilliant success, so far as it enables men to return to duty early, always provided, that a fit man is not put among the non-employed, merely because his blood is positive; but we must have a much more open mind as to future eventualities before going further. I do not want it to be thought, that I am an opponent of the new treatment; far from it, for I consider that, properly used in conjunction with intramine and supplemented by treatment for from one to two years, a great advance has been made. What I do want is to convince my readers, that everything is not so rosy in the garden as others would have them believe. The more I see of syphilis—and the same applies, although in a much less degree, to the other venereal diseases—the more convinced I become (1) that the word "cure" should never be used; (2) that no treatment, however much an improvement on that existing, will ever lessen the incidence of the disease; (3) that prevention is the main thing, to which we should turn our attention.

ULCUS MOLLE.

I have the impression that soft sore has become a more common and a more chronic disease since the outbreak of war. Cases complicated by bubo are frequent, and, owing to the injudicious handling by a wide incision which is so commonly practised, instead of a nick to let out the pus, one not infrequently sees cases of a bubo remaining unhealed for months and even years. A chronic suppurating bubo is apt to give rise to ulcers (*Ulcus molle serpiginosum*) which spread far and wide, and in one case of which I have notes the ulceration remained unhealed for 27 years. The moment a patient gets pain in the groins and up to the time when it becomes questionable as to whether a tiny incision should be made, 1 c.c. colloidal manganese should be injected intramuscularly and 1·5 c.c. on the fifth day. If there is no pus, the bubo will abort; if there is pus, it will be brought to a head. If under ordinary treatment the bubo will not heal or a chronic ulcer has formed, dress the wound with intramine twice a day and inject intramuscularly 2 c.c. intramine. On the fifth day inject 3 c.c. intramine and on the ninth day 1·5 c.c. colloidal manganese. The cases are only very few which require a second course, and anyone who tries this treatment will be surprised at the readiness with which ulcers, which have persisted for months, will heal in a few days. Up to date I have treated 71 such cases, which had already been under ordinary treatment for an average of 52 days, and which were fit for duty under the special treatment in an average of 14 days.

GONORRHŒA.

Before dealing with the chemotherapeutic treatment of gonorrhœa,

I should like to say a few words about phagocytosis. Contrary to the general view, that gonococci are killed and then ingested by the polymorphonuclear leucocytes, I am of the opinion that the gonococci one sees in these leucocytes are living at the expense of the leucocytes. One cannot fail being struck with the bright staining organisms in a feebly staining and degenerated looking cell, which certainly does not suggest phagocytosis. That the gonococci live at the expense of the leucocytes is, I feel sure, one of the reasons why the disease is so hard to cure. In the most chronic form of soft sore—*Ulcus molle serpiginosum*—Ducrey's bacillus is found intracellularly situated. The same is to be said of the pneumobacillus in rhinoscleroma, and of the organism which causes *Granuloma pudendi*, not to mention the various protozoal parasites.

When the polymorphonuclear leucocyte is compared with the lymphocyte, which I take to be the most important cell in the body and the producer of the colloidal particles (protective substance in the serum) upon which our vaccines and chemotherapeutic agents act, it will be noticed that the former, leucocyte, has feeble staining properties and no nucleolus, is incapable of division. The lymphocyte and its offspring, the plasma cell, on the other hand, stain brilliantly, have nucleoli, and are capable of division. It is inconceivable that such a second-rate cell as the polymorphonuclear leucocyte should be thought capable of filling the part generally assigned to it. I believe the cell is only a scavenger of dead bacteria, etc. In chronic infections, in protozoal diseases, and in malignant disease, the presence of the polymorphonuclear leucocyte is usually insignificant. It is quite common to find, after an intramuscular injection of a vaccine or of a chemotherapeutic agent, that a swelling of the lymphatic glands occurs in the region draining the site of the disease. If a section is made of such a gland, the lymphocytes will be found to be enormously increased in numbers, which suggests that the drugs not only act on the existing protective substance, but also stimulate its further production. It is in view of this, that the removal of lymphatic glands, except, of course, in certain cases, is in my opinion so strongly contra-indicated. If this is true, then there is no such body as an opsonin; there is a protective substance, in the form of colloidal particles, which acts as already described.

Vaccines increase the action of the protective substance by adsorption, in virtue of a certain homology existing in the structural composition of the two substances; whilst chemotherapeutic agents act either by increasing the oxidizing or reducing action of the protective substance, neither having any influence on the polymorphonuclear leucocyte. The negative phase following vaccines is when some of the particles of the protective substance are either precipitated or broken up and sent into true solution, as the result of the adsorption between the two—*vide* and compare the *rationale* of Wassermann reaction and shock. This subject is so intensely interesting and I venture to think so simple, that I must ask my readers, if they wish to know more about it, to consult my *Biology and Treatment of Venereal Diseases* and *Links in a Chain*

of Research on Syphilis. It is partly owing to the intracellular life led by gonococci, and partly to the fact, that gonorrhœa in its early stages is a local disease, and so issues only a feeble call for protective substance on the part of the host, such remarkable results are not obtained with colloidal manganese as in the case of acute and widespread staphylococcic (boils, carbuncles, etc.) and streptococcic (erysipelas, puerperal fever, etc.) infections. Owing to the great risk when the disease is so local of giving too many injections and overdoses of colloidal manganese, which usually result in the metal itself becoming oxidized, I have for the last seven months begun my treatment with palladium,[6] a metal which is not oxidizable.

The preparation is a colloidal one of palladium, called, for short, "pallamine," and supplied by Crookes' Laboratories. Palladium may be diagrammatically represented to act as follows :—

$$Pd + H.OH = Pd.H + OH'.$$

No direct combination takes place between the Pd and the H, which is written Pd.H; in fact, the H becomes liberated after a time, and, therefore, to avoid its raising the hydrogen ion concentration, drugs should be given internally to neutralize its action. For this purpose, I use potassium nitrate with sodium bicarbonate and methylene blue. If these drugs are given internally, irrigations employed as usual, and 1·0 c.c. pallamine is injected intramuscularly, the purulent discharge in most cases will become muco-purulent, or even undiscoverable, on or about the fifth day. On the fifth, sixth, or seventh day, but not before, 0·5 c.c. colloidal manganese should be injected intramuscularly; and repeated as 0·5 c·c. or 1·0 c.c., according to the condition, at about the same interval if the discharge has not dried up. Owing to the readiness with which manganese becomes oxidized, I have been running a parallel series of cases treated with a colloidal oxide of vanadium, but at time of writing I think Mn. is, on the whole, better than V., but in certain cases the introduction of V. between Pd. and Mn. seems advisable. It is not wise to give more than one injection of pallamine, except when two injections of 0·5 c.c. are prescribed instead, and when the discharge is still acute after two or more doses of colloidal manganese have been injected. Pallamine should never be used in subacute and chronic cases of urethritis. In subacute cases of urethritis and in complications, when acute, manganese and then intramine should be used, as advised in my last article in THE PRACTITIONER, for May, 1918. In chronic cases, and in complications when chronic, intramine should precede manganese. In a few chronic cases of urethritis colloidal antimony is better than manganese. The prostate should never be examined while the patient has a discharge, and intraurethral instruments should only be employed in exceptional cases.

The effect of the chemotherapeutic treatment for gonorrhœa has been to reduce the stay in hospital from 40 to 18 days, and to diminish the incidence of complications to next to nothing.

The incidence of epididymitis is, in my experience, about 15 per

cent. Luys puts it as high as 25 per cent. In over 800 cases treated with chemotherapeutic agents, it has been reduced to 2 per cent. Vesiculitis has been reduced from 7 per cent. to under 1 per cent., and arthritis from 2 per cent. to 0 per cent. In several cases of gonorrhœal ophthalmia, manganese has saved the eye from being removed. Conjunctivitis, associated with rheumatism and iritis, disappears under intramine followed by manganese.

Considering how rebellious gonorrhœal rheumatism and arthritis are to ordinary treatment, and how many men have to be invalided out of the Service on that account, intramine has really worked wonders. On the first day, 2·5 c.c. intramine should be injected intramuscularly; on the fifth day, 4 c.c. intramine, and on the ninth day, 1·5 c.c. colloidal manganese. It may occasionally be necessary to repeat this course once or twice. It is advisable to give colloidal iodine either synchronously with or preferably before the injections are prescribed. Colloidal iodine oil, or unguentum guaiacol, should be rubbed on the joints, and massage instituted at the earliest possible moment. The only cases in which this treatment fails are those which have been allowed to get chronic through using ordinary methods, and certain cases of mono-articular arthritis, associated with extreme debility and wasting.

Above I have given the incidence of gonococcal arthritis as 2 per cent., a figure collected in a venereal hospital, but it is much higher than this, for I have found that the majority of cases find their way into medical hospitals as ordinary cases of arthritis. I have recently visited some medical hospitals, and found that not only was arthritis one of the commonest complaints, but that fully 90 per cent. were of gonococcal origin. As a rule, gonococcal arthritis is secondary to a prostatitis or vesiculitis, and does not set in until some time after the discharge has stopped and the patient either thinks himself cured or has been discharged from a venereal hospital as cured. I am convinced, that not more than 5 per cent. of the cases of gonorrhœa discharged from venereal hospitals are really cured, and because they do not return to the same hospital, or within a week or two of discharge, the medical officer cannot get a true perspective of the situation. While some confirm my results, others do not and assert, that what I say cannot be substantiated. If the injections are given anyhow, irrespective of numbers, dose, or interval between each, and without taking the trouble to master the foundation upon which the work is based, it is not likely that their results will be favourable. To cite a case—

Case 4.—A patient consulted a friend of mine for a chronic urethral discharge. On the first day he received 1·0 c.c. pallamine, and 1·0 c.c. colloidal manganese on the fourth and eighth days respectively. Four days later the patient was brought to me complaining of being ill and of acute rheumatism. On examination I found, that he had erythema multiforme, gonorrhœal rheumatism, and a fresh right vesiculitis. With two injections of intramine and a final one of manganese the patient got perfectly well. If intramine had only been given in the first place, as I have advised, none of the unpleasant sequelæ would have resulted, and the treatment

would not have been blamed for having been inefficient.

I have now seen many cases treated with manganese, etc., but not in the way I should have done myself. It has been stated and noted by those who only admit to 1·9 recurrences in syphilis, that the relapses following the chemotherapeutic treatment of gonorrhœa more than counterbalance the advantages to be gained from it. When giving the statistics for relapses it should be made clear whether they refer to cases which come back to the same hospital, or include those treated at other hospitals. The 19 per cent. I have given for recurrent cases of syphilis after official treatment includes cases treated at hospitals other than my own. The 1·9 per cent. probably refers to cases which are re-admitted to the same hospital. As the chemotherapeutic treatment is new, I only have access to the cases I have treated which come back to me, and I know nothing of those which relapse to other hospitals. Of my own cases 8 per cent. recur after special treatment, and after ordinary treatment 9 per cent. This comparison again is of little value, because the type of case is not taken into consideration.

What is to be noticed, is that the recurrences after special treat ment resemble the syphilitic recurrences after official treatment, *i.e.*, the recurrence is the same as the initial lesion, which in gonorrhœa is an acute, purulent, anterior urethritis, and appears much sooner. Under mercurial treatment only, recurrences do not, as a rule, appear for some years, whilst after official treatment weeks may be substituted for years. In gonorrhœa under ordinary treatment practically every case develops posterior urethritis, which may not recur for years with a discharge acute enough to make the patient seek advice, or a complication may develop, such as arthritis, iritis, etc., which makes the patient consult anyone but a specialist in venereal diseases. Owing to the powerful and beneficial action of pallamine, colloidal manganese, etc., the infection remains limited to the anterior urethra, which calls forth so little protective substance from the host, that if the case is not cured, a recurrence will set in quickly and simulate the original infection.

The fact, that admitting patients with gonorrhœa to hospitals has largely increased the desire to avoid going back to duty, will always prove a difficulty in arriving at the correct figure for relapses. In civil life, unless a complication occurs, a patient carries on his daily work, and, as far as my experience goes, complications are more common in soldiers than in civilians. Therefore this point cannot be put forward as a plea for making patients with gonorrhœa inmates of a special hospital. The devices employed to bring on and to keep going a discharge are too numerous to tell; moreover, places exist where a soldier can contract gonorrhœa by paying double, and, in the Italian army especially, men have learnt to infect an eye without having an urethritis, so the reader can appreciate the difficulties which beset the statistician. This is a subject, which requires dealing with alone, and limited space prevents more being said about it here, so I must close this part of my subject by saying, that the chemotherapeutic treatment of gonorrhœa, even in its infancy, has proved a success, not only in

shortening the patient's stay in hospital but also in reducing the incidence of complications almost to nil. Naturally there is room for still further improvement, but under existing circumstances it is not easy to do research work, which requires one's constant attention for several hours a day.

SKIN DISEASES.

Colloidal manganese has proved a greater success in boils, carbuncles, erysipelas, etc., than ever I could have anticipated, but even in these diseases neither too big nor too frequent doses must be given. In certain acute eczemas, lymphangitis, and sulphur dermatitis following treatment for scabies, manganese has proved invaluable, and I have been sent notes of three cases of septicæmia following abortions, which would most probably have proved fatal, but entirely recovered after the second injection. In chronic skin diseases such as acne, acne rosacea, seborrhœic eczema, etc.,[5] no treatment can touch the results obtainable by giving two injections of intramine and then one or two injections of colloidal manganese. In mustard-gas poisoning, which is due to sulphur (di-chlor-ethyl sulphide), more suffering, if possible, is caused to the patient than in arsenical dermatitis, in view of the fact that, besides the dermatitis and burns, conjunctivitis, tracheitis, and bronchitis are so common; but equally satisfactory results are to be obtained with colloidal manganese in the former case as with intramine in the latter. I have now treated over 50 cases of mustard-gas poisoning, and, having used various oxidizing agents, such as arsenobenzene, colloidal vanadium, colloidal antimony, and colloidal mercury, no results are quite so good as those obtainable with colloidal manganese, with the exception, perhaps, of certain cases treated with colloidal vanadium. I mention these various diseases to show how generally applicable the theory of oxidation and reduction is, how simple it makes many of the problems in medicine, and how the prescribing of drugs, which are in the main empirical, can be largely done away with. For those who require more details about the application of the new chemotherapy, I append a bibliography of the recent literature.

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TREATMENT OF 100 CASES OF GONORRHŒA BY IONIZATION AT A STATIONARY HOSPITAL, B.E.F.

By Capt. F. W. BAKER YOUNG, R.A.M.C. (T.F.).

Hon. Assistant Surgeon, Cancer and Skin Hospital, Liverpool.

The hundred cases were treated during the last two weeks of April and in the months of May and June, 1918. They were not specially selected, but the following types were treated :—

(*a*) No previous venereal history.

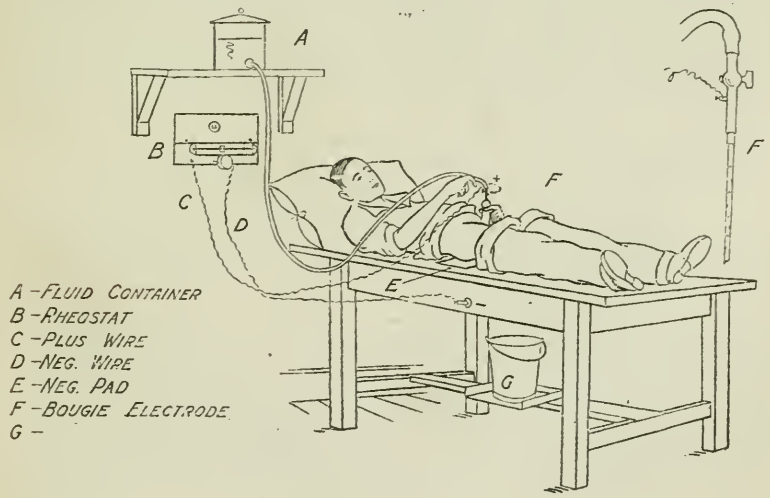
(*b*) No previous venereal history, but had received treatment for varying periods without losing their discharge, and still showed gonococci in their smears.

(*c*) Re-infections with past histories of one or more attacks of gonorrhœa.

(*d*) Relapses. Cases which had been treated for gonorrhœa and had been returned to hospital for symptoms suggesting a recrudescence of disease without fresh infection.

APPARATUS.

The current was supplied from accumulators. Three independent rheostats were connected with main supply, each rheostat being fitted



with an independent milliampmeter. This arrangement allowed three cases to be treated simultaneously; given an increased number of rheostats and milliampmeters, it is capable of dealing with 20 cases simultaneously, with present arrangement of accumulators, viz., 18 cells of 2·2 volts arranged in series.

The electrodes used were of various types, the best being a flexible bougie electrode, obtained from Malaquin, Paris. The most suitable size bougie is a No. 9 English; but in some cases, in which there was a narrow urinary meatus, a No. 5 English bougie was used.

The sterilization of the bougie is effected in formalin solution, after which they are placed in a dry formalin cupboard. Before use they were washed through with sterile water.

SOLUTIONS.

Solutions of copper sulphate and zinc sulphate were used exclusively, 1 per cent. or ½ per cent. copper solution, and 1 per cent. zinc solution. All solutions must be prepared with distilled water, and kept in glass containers.

TECHNIQUE OF TREATMENT.

Each of the earlier cases was ionized on alternate days, and on the intervening days the patient was instructed to irrigate himself twice daily with 1 in 8,000 solution of permanganate of potash.

After giving this method a trial for one month, I stopped the irrigation with permanganate, and each patient syringed himself with the same solution as that prescribed for his electrical treatment next day.

Since June 21, I have come to the conclusion that it is unnecessary to syringe with copper or zinc solutions, and the patients use a 1 per cent. solution of NaCl. This solution washes away any débris in the urethra, and has no specific action on the diplococcus, but acts as a placebo, occupying the patient's attention on the day on which ionization is not practised.

The following routine is now carried out with each patient:—

1. On admission to ward a smear is taken. He is put on "milk diet and rest," and instructed to drink water freely.
2. Ionization with $CuSO_4$ ½ per cent., 10 milliamperes being passed for ten minutes.
3. He is instructed to syringe himself twice daily on the days without ionization with a 1 per cent. solution of NaCl.
4. Ionization with $CuSO_4$ ½ per cent. is continued on alternate days until he has received four to six treatments.
5. Ionization with $ZnSO_4$ 1 per cent. is then started. The indication for the change is given by the state of the discharge. As soon as this becomes mucoid, and not mucopurulent.

zinc is required.

The actual treatment is carried out in the following manner :—

1. The patient is instructed to pass urine.
2. He is placed on the table, with his buttocks bared and in contact with negative pad.
3. The meatus is cleansed with copper or zinc solution according to which solution is to be used.
4. The bougie electrode is lubricated with a sterile solution of gum tragacanth and mercuric oxycyanide.
5. The solution is run through the bougie electrode, which is passed into urethra.
6. The solution is allowed to escape for a few seconds from the meatus.
7. The patient is instructed to grasp his penis with one hand so as to stop the escape of the solution, the supply of which is then turned off at the tube leading from the container.
8. The positive wire is connected to the electrode, and the current is gradually increased by rheostat up to ten milliamps.
9. At the end of four minutes the solution is again allowed to run for a few seconds, and this is repeated at the end of eight minutes.
10. After ten minutes' treatment the current is slowly reduced to zero, the bougie is removed, and the patient is allowed to get up.

SEQUELAE.

The pain is practically negligible, even in acute cases. Patients complain of a slight burning sensation in the urethra, which passes away in about an hour. The discharge is considerably lessened in quantity, and after from four to six treatments loses its purulent character and becomes mucoid.

After treatment with zinc, about 20 per cent. of the patients complain of chordee, and about half of these experience a nocturnal emission. Sedatives have not been required.

Two cases developed epididymitis, and treatment was suspended.

Three cases required meatotomy, a No. 5 bougie could not be passed owing to the small size of the meatus.

In one case a bougie electrode broke while being removed, leaving a piece, one inch long, about two inches inside the urethra; this was extracted with a thin pair of sinus forceps.

In the attached analyses of cases, 1 is a reference column ; 2 gives the last known date of exposure, and the date on which the discharge was noticed; in 3, the history refers to all occurrences of moment previous to electrical treatment being administered, with special attention to any previous treatment; 4. Smears were examined and reported on by the pathologist at the hospital; 5. Number of treatments refer to the number of times the bougie electrode was

passed for treatment; 6. The number of days' treatment refers to the time when electrical treatment was started and finished; 7. the remarks show the number of different solutions, and the strengths employed in each case.

I have come to the following conclusions :—

The treatment is suitable in both acute and chronic cases, and it is immaterial which part of the urethra is affected. Chronic cases respond admirably to ionization, and gleet of some years' standing is dried up after resisting various forms of treatment.

Cases of urethral strictures, gonorrhœal rheumatism, indolent ulcers, and chancroids have also been treated, and I hope to publish a paper at a later date with details.

NOTE.—The following eight cases (pages 149 and 150) have been selected from the detailed list of 100 analysed as best illustrating the types of the cases treated.

August 14, 1918. Since completing the 100 cases, 50 more men have been discharged to duty.

I have only been able to trace four cases which have returned for further treatment; of these, two were certainly re-infections. The results obtained compare favourably with other methods of treatment, but not to such a decided degree that I would advocate the adoption of the method on a very large scale in military hospitals.

It is, however, worthy of note that of the 100 cases treated 80 were, as far as could be judged, cured, after a stay in hospital of an average of 21 days.

—	E. Date of Exposure. D. Date of Symptoms.	History	Pathological Reports.	Times treated.	No. of Days under Treatment.	Remarks.
1	2	3	4	5	6	7
A8	E. 3/5/18 D. 6/5/18	N.P.V.H.	16/5/18. G.C.I. 2/6/18. G.C.—pus & few epith. cells. 6/6/18. G.C.—epith. & pus cells.	6	12	Treated with (4) $CuSO_4$ 1% (2) $ZnSO_4$ 1%. Discharged to duty.
A13	E. 3/5/18 D. 22/5/18	N.P.V.H.	25/5/18. Pus, few epith. cells. G.C., mostly E. 10/6/18. G.C.—mucus, epith.	6	11	Treated with (5) $CuSO_4$ 1% (1) $ZnSO_4$ 1%. Discharged to duty.
A18	E. 12/4/18 D. 22/4/18	Treated by irrigation for 3 weeks. N.P.V.H.	25/4/18. Pus & epith. cells. G.C.I. & E. 26/5/18. G.C.—mucus, pus and epith. cells.	6	13	Treated with (4) $CuSO_4$ 1% (2) $ZnSO_4$ 1%. Discharged to duty.
A32	E. 21/3/18 D. 4/4/18	N.P.V.H. Treated 5 weeks with irrig. pot. permang. Pus still present.	14/5/18. G.C., mostly I.—mucus, few epith. cells. 10/6/18. Few micro-organisms. G.C.—epith. cells, mucus. 16/6/18. G.C.—	10	23	Treated with (5) $CuSO_4$ 1% (5) $ZnSO_4$ 1%. Discharged to duty.
A36	E. 11/2/18 D. 16/2/18	Reinfected 11/2/18. 1st Attack :—April, 1917. Treated for 4 months. Has now been treated for 6 weeks irrig. pot. permang. Still has discharge of pus.	25/3/18. Pus. G.C.I. & E. 3/5/18. Pus, mucus. G.C. ++ I. & E. 21/6/18. Pus, epith. G.C.— 25/6/18. Mucus. G.C.—	5	14	Treated with (4) $CuSO_4$ 1% (1) $ZnSO_4$ 1%. Discharged to duty.

—	E. Date of Exposure D. Date of Symptoms.	History.	Pathological Reports.	Times treated	No. of Days under Treatment.	Remarks.
1	2	3	4	5	6	7
A38	E. Multiple.	Treated for gon. 10 weeks, 1916, at Havre. Adm. Staty. Hospital 3/3/18. Treated 2 weeks pot. permang. irrig. G.C.I., and pus still profuse. Ioniz. 3. Complication :—Prostatic abscess. Treatment :—Rectal irrigations. A month later G.C.E. still present, with profuse milky discharge. Ioniz. resumed.	15/3/18. G.C.I. 16/4/18. Pus ++ G.C. I. 1/5/18. G.C.—	7	48	Treated with (1) $CuSO_4$ 1% (6) $ZnSO_4$ 2%. Discharged to duty.
A44	E. 22/9/17	Relapse. Treated at No. Staty. Hospl. Re-admitted 22/4/18. Treated for 3 weeks with irrig. pot. permang. Gleet still present.	22/4/18. Pus, epith. cells and mucus. G.C., plentiful I. & E. 3/6/18. Pus, few epith. cells. G.C.—	6	14	Treated with (4) $CuSO_4$ 1% (2) $ZnSO_4$ 1%. Discharged to duty.
A88	E. 6/5/17 D. 6/5/18	3rd relapse. States no exposure for 12 months. Pus copious.	19/5/18. Pus, few epith. cells. G.C.I. & E. 14/6/18. Mucus, epith. cells. G.C.—	6	22	Treated with (6) $CuSO_4$ 1% Penis dry. Discharged to duty.

Abbreviations.—G.C.I. & E.=Gonococci intra- and extra- cellular. E. & D. (Column 2) = Exposure and appearance of discharge. N.P.V.H. (Column 3)=No previous venereal history.

EXTENSIVE SHELL WOUND OF SHOULDER GIRDLE WITH OPERATION NOTES ON CONSERVATIVE SURGERY.

By H. C. ORRIN, F.R.C.S.

Late Resident House Surgeon, Royal Infirmary, Edinburgh.

The following case under my care was of extreme interest from the point of view of the enormous amount of trauma and destruction of tissue done to the shoulder girdle as a result of a shell explosion, and of what was finally achieved by means of conservative surgery.

The history of the case, as far as can be ascertained both from the patient and from the medical notes from France, is as follows :—

Private M., æt. 19½, was wounded in the left shoulder by a large fragment of shell. In consequence of the heavy shelling it was impossible to bring him in for many hours after his injury, with the result that when he did arrive at the dressing station he was practically moribund from loss of blood and shock, following the severe nature of his wounds. Direct transfusion of blood and general restorative measures were resorted to, and the extent of his injuries examined under an anæsthetic. It was then found that practically the greater part of the shoulder girdle has been involved, the outer end of clavicle, acromion process and spine of scapula, glenoid cavity, head and part of shaft of humerus and their covering structures, being entirely destroyed. Amputation was decided upon, but was postponed until next day to allow the patient a chance of general improvement.

For military reasons, however, evacuation of patients from that hospital became necessary the same night, and the patient in question was sent to England, arriving here 24 hours later with an urgent note to "amputate on arrival."

I saw him immediately upon admission to hospital, where he was taken direct to the theatre. Upon examination, I found the whole of the outer part of the shoulder had been carried away by shell explosion; the outer end of clavicle had gone, and with it the acromion process and outer two-thirds of spine of scapula, and the muscles of the supra- and infra-spinous fossæ. The glenoid cavity, head and upper one-sixth of shaft of humerus were missing, as well as the structures covering them. Curiously enough, the coracoid process remained intact. The condition, therefore, presenting itself was that of a huge loss of continuity of the shoulder; the arm, or rather what remained of the arm, hanging by the patient's side, being merely attached to the trunk by the floor of the axilla.

It is quite impossible to describe the full nature and appearance of the injury, the patient being too ill to allow a photograph to be taken at the time. In order, however, to give some impression of this, I have had a photograph prepared and worked up from a rough sketch I made at the time of operation. Figs. 1 and 2 serve to illustrate fairly well the anterior and posterior lines of limitation of the loss of continuity of the structures and extent of the injury.

The Operation.—The problem, therefore, before one was what could be

done. Obviously, the condition was one for amputation; but the question was how and where, and what possibilities there were for conservative and plastic measures of filling in the deficient areas of the shoulder and posterior scapula regions, and at the same time for providing something in the nature of a stump in the anticipation of an artificial limb. It was to meet these essential requirements that I set to work upon a conservative method of operating.

The first step was the procuring of a large musculo-cutaneous flap, which would cover in, when suitably adjusted all the exposed areas. This was obtained as follows: I began by a circular amputation at the elbow joint. The shaft of the humerus, or what remained of it, was then filleted out through a vertical incision extending from the floor of the wound, (humeral portion) down to the amputation line—Fig. 1 A–B. With the bone thus removed, and the fleshy mass fully spread out, I was now in possession of a large and valuable flap, containing the main blood vessels, which with careful planning could be turned to good account.

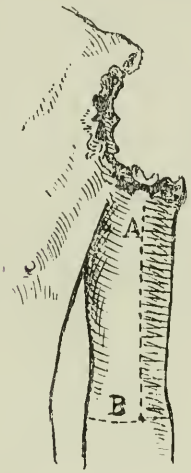


FIG. 1.

FIG. 2.

A most important point was the selection of the situation of the vertical incision through the anterior aspect of the upper arm. I chose the outer bicipital fold for two reasons:—First, that the brachial artery might have as much muscular protection as possible; and, secondly, I hoped to utilize that part of the flap containing the biceps, to fill up and make good the loss of structures in the supraspinous fossa. The result of this procedure was excellent.

The edges of the original wound having been freshened, the next step in the operation was the adjustment of the flap. This was turned upwards and then rotated on itself so that the inner border now became adjacent to the anterior and superior margins of the wound, and was fashioned into shape so as to follow accurately the sinuous outline of the shoulder defect; this was then retained in position by strong salmon gut sutures.

It was most gratifying to find at the end of the operation that

by this method of operating, not only had the whole of the deficiencies been made good and the entire wound areas covered in, but that in the utilization of the upper arm for the purpose, and by its manner of rotation, an excellent, firm, fleshy, yet boneless stump had been obtained. Fig. 3 shows the final result.

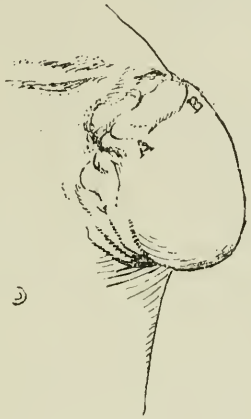


FIG. 3.

A debatable point arose during the operation as to the question of the retention of the exposed coracoid process. There certainly was considerable difficulty in covering over this projection, and in order to do this efficiently and neatly I was compelled to remove a circular core of muscle from that part of the flap which was to cover it. It would have made the task much easier to have removed it, but I decided not to do so for the reason that I foresaw a possible point of support for the attachment of the future artificial limb.

It is interesting to note in the following-up of this case that the wisdom of this latter step became evident. It was the opinion of an eminent orthopædic authority at the Limbless Home, to which the patient was sent, that " without the presence of the coracoid process the fitting of an artificial arm would have been impossible."

The patient made an excellent recovery, and when I saw him, six months after the operation, the final result was most pleasing. He is now making full use of his artificial arm.

A CASE OF TETANUS OF LONG INCUBATION, TREATED BY ANTI-TETANIC SERUM; SEVERE ANAPHYLAXIS; RECOVERY, BUT DEATH LATER FROM GANGRENE OF THE LUNG.

By P. R. COOPER, M.D., B.Sc., F.R.C.S.

Hon. Surgeon to the Altrincham General Hospital and to the Haigh Lawn and John Leigh Red Cross Hospitals, Altrincham.

Pte. H., æt. 23, came under my care at the Haigh Lawn Red Cross Hospital, Bourton, in July, 1916. He had been wounded by shrapnel in France on the 2nd of June, receiving numerous superficial wounds in the buttock, right thigh, and foot. On admission, most of these wounds were healed, but a small sinus persisted in the perineum, close to the anterior margin of the anus, and there was a perforating wound of the second toe through the interphalangeal joint, which still discharged. The general condition appeared excellent, except for some pallor. There was no pyrexia.

The wounds seemed to be progressing satisfactorily, but as the perineal sinus still persisted, it was laid open freely and packed from the bottom with iodoform gauze on July 26; in the course of three or four weeks, the sinus had closed. After two to three weeks, the place again began to give trouble, and on September 16 it was again laid open, and some hard, almost cartilaginous scar tissue at the bottom of the track, which appeared to be preventing healing, was excised. For three weeks the patient seemed to be in good condition, and his wound pursued a normal course; he then complained of feeling "out of sorts," said his throat felt sore, and developed stomatitis. A mouth-wash was ordered, and a mixture containing iron and quinine. The mouth and throat conditions were somewhat relieved, but in the early morning of October 17 he had a "choking" attack, and I was hastily summoned to his bedside. He was quite conscious on my arrival, but looked ill and slightly cyanosed. He was, however, breathing quite easily, and there was no evidence of stridor. Whilst I was examining him, however, he sneezed, and it was the character of the sneeze which first aroused any suspicion as to the nature of the underlying disease. It was as if he had tried very hard to suppress the sneeze, but had failed, and the effect of the sneeze was unduly prolonged. There was spasm of the diaphragm, of all the respiratory muscles, and especially of the muscles of the neck and jaws. The sneezing was distinctly painful, and he dreaded its recurrence.

The patient was able to take food, and had a subnormal temperature; his pulse was 110, and his skin was moist. He was removed from the open-air ward, to a warm room. A mixture containing bromide of potash and chloral hydrate was given instead of the quinine and iron mixture.

I reported the case as a probable case of tetanus, and Major Dean, of Manchester, came to visit him on October 18, agreed with the diagnosis, and at once gave the patient 30,000 units of anti-tetanic serum intravenously. It was noted that there was rigidity of the abdominal muscles, as well as of the neck, jaw and back muscles; the hamstrings were also tense and the knees slightly flexed. A few hours after the injection the patient complained of breathlessness during the night; he was restless and sleepless, and had a good deal of pain. There was little, if any, improvement in the

tetanic symptoms, so on October 20, 10,000 units of anti-tetanic serum were given intra-thecally. Four hours later the patient had a series of violent, general, tetanic convulsions, became comatose, and, after one prolonged spasm, actually stopped breathing, and seemed to be moribund. Artificial respiration was promptly resorted to, and, after five or ten minutes, breathing restarted; but the respirations were of a gasping character, and the patient was deeply asphyxiated. The pulse was feeble, 150, or more, per minute, the body covered with clammy perspiration, and the patient appeared to be dying. Stimulants were administered, both hypodermically and per rectum, and I remained by his side all through the night, occasionally administering a little chloroform when a violent convulsion occurred, and giving digitalin and ether hypodermically, and applying heat externally as the heart flagged. The gasping respiration continued, and the patient remained unconscious and unable to take anything by the mouth. Next morning the convulsions became less frequent and severe, and there was a a return of consciousness. The patient was now able to drink a cup of tea, for which he expressed a desire. He was extremely weak, and could only speak in a whisper, and slept a good deal. The temperature was subnormal, pulse 132, respiration 30, still gasping, and there was marked air-hunger. A short dry cough developed, and pain was complained of in the left side of the chest. There were, however, no physical signs to be elicited. In the succeeding few days the patient remained free from convulsions, but there was still some hypertonicity of the neck and abdominal muscles. The cough persisted, and some muco-purulent expectoration was collected, which contained large numbers of pneumococci. Some râles and rhonchi were noted at the bases of both lungs. An expectorant mixture was given, and an inhalation of Ol. Eucalyptus and Tinct. Benzoin Co. ordered. The temperature became irregular, rising to 102° or more in the evening, and accompanied by profuse perspiration. The patient took food well, but had occasional bouts of vomiting. He began to lose flesh markedly. His condition remained much the same for three weeks, when the odour of the breath and sputum began to be extremely fœtid, and quickly assumed the characteristics of gangrene of the lung. As the condition was bilateral, and the patient's weak state rendered operation inadvisable, no surgical intervention was attempted. The patient remained quite rational up to the last, and bore his sufferings with remarkable fortitude, dying, finally, of exhaustion and cardiac failure, about six weeks after the subsidence of the tetanic symptoms.

Comments.—The striking features about this case are first, the long incubation period of 137 days, assuming, of course, that the infection occurred at the time of the original injury. Prior to the injection of antitoxin there had been only localized convulsions, although there was well-marked hypertonicity of the muscles of trunk and lower extremities. The peculiar resisted and prolonged sneezing was very characteristic, and I have not seen it previously referred to. The subnormal temperature, along with profuse perspiration, was also notable. The collapse following a few hours after the intrathecal injection of serum was, in my opinion, a true anaphylaxis, during which the patient almost died from respiratory and cardiac failure. The unfortunate development of a septic broncho-pneumonia, which progressed to gangrene of the lung, was presumably due to inspiration of septic material into the bronchi during the comatose stage, in which there was well-marked inspiratory dyspnœa, aided, also, probably, by the lowered resistance due to the anaphylactic shock:

DREAMS AND THEIR VALUE IN TREATMENT.

By M. CULPIN, M.B., F.R.C.S., Captain (Temp.) R.A.M.C.

Ewell (County of London) War Hospital.

The treatment of war psychoneuroses by making the sufferer face his memories and grow accustomed to them is directly opposed to the old-fashioned plan of urging him to "forget all about it." No one who has used the first method with sympathy and perseverance has any doubt about its efficacy, but there are many hindrances in its actual practice.

The men have almost invariably been trying to forget, and need lengthy argument before they are convinced that the opposite process will help them, but an intelligent patient who has been through the "cure" is often able to overcome their objections, and help them to recall memories with the result that the emotional effect of these disappears as the patients grow more familiar with them.

There are all degrees of "forgetting," from a mere reluctance to think of terrifying episodes up to a complete amnesia for long periods, even for the whole of a man's experience in France.

As the memories are brought to the surface, the symptoms diminish or disappear; the stammers and tremors grow less, the very real feelings of impending disaster only occasionally recur, terrifying dreams cease, and the sufferers become enthusiastic in support of a method which they at first opposed.

In these patients the loss of memory differs from the usual process of forgetting. Certain incidents associated with emotion are so repugnant to the man's feelings, that a psychological mechanism intervenes and prevents the memories from coming into his consciousness; it is this mechanism which Freud calls "the censor."

There are various methods of evading the censor, and the one I describe depends upon the tendency of a repressed memory to appear in the patient's dreams; though the emotion may be the only true part of the dream, the incident itself being usually symbolized or distorted. If the incident appeared correctly and completely, the censor would be defeated and the memory come into consciousness. I cannot always be certain that a memory I revive has been completely buried, but some of the examples given below were repressions in the fullest sense of the word.

The patient relates the dream to me, and I question him about it, explaining a little of the mechanism of repression. If the underlying memory is not deeply buried, this questioning may recall it, and it is only necessary to insist on the man talking about the incident. This

procedure I call " open association," but it usually fails to reach the core of the dream.

Next I make the patient close his eyes and visualize the dream; he often elaborates it at this stage, and I try to ascertain what particular feature causes emotion. By dwelling upon this feature and the feeling it produces, I induce an emotional state and assure him that he felt like that once before, and that the memory is coming up. When success is obtained, there is a sudden change of facial expression or even an access of terror which startles me; by this I know that I have reached the true cause of the dream, and that the story I obtain is the essential one.

The merest scrap of a dream suffices, and I have sometimes successfully worked with the emotion felt on waking, even when the dream cannot be remembered. From this I was led to try the method in cases in which patients complained of certain feelings apart from dreams. Case No. 3 is an example, and I have occasionally arrived at the cause of a pre-war phobia by the same means, although when a dream is available the process seems easier.

This method I call " sleep association," and the condition produced often proves to be a hypnosis, for the incident recalled is sometimes forgotten again as soon as the man opens his eyes, and may be strenuously denied at subsequent interviews.

It has happened to me to stumble upon pre-war repressions of considerable importance, of which Nos. 5, 11, and 14 are examples. They have all occurred in psychasthenics—patients with feelings of hesitation and doubt, strange little obsessions to do futile actions, fears of being followed, and perhaps the better known phobias of the text-books. This has led me to look for repressions in such cases, and frequent successes arouse speculation whether the psychasthenia is due to the repression or whether the patient represses because he is a psychasthenic.

The following is a selection of dreams illustrating various points :—

1. Dream.—*On a bombing raid; captured by Germans. Terror!*

Open association negative.

Sleep association. He gave a story of going over the top and being captured and in fear of death. This was an elaboration of the dream, but he told it as if it were true. I held him to the fear of being killed, and suddenly there came up the true story, viz., the raid ended in the enemy's trenches, the Germans would not come out of their dug-outs, and our men bombed them. The patient felt considerable emotion at the time, and the revival reproduced it. At the next interview all was forgotten, including the dream, and my account of the episode was not recognized. Sleep association led to a repetition of the dream three times before I could get the true story. At the end of treatment the story could be told without emotion.

2. *Dream of shells.* Patient fell out of bed.

No attempt was made at sleep association, but whilst talking of the dream the man went into a somnambulism and acted a drama in which he fell down a dug-out on to dead Germans. At the next interview all knowledge of the incident was denied, and its recall was associated with great emotion. At the next it was again denied, and only after many talks was the episode

recalled easily and without emotion. I cannot say whether the falling out of bed was a dream action (compare No. 3) or whether the association was accidental.

Cases Nos. 1 and 2 taught me to carry on the story from the stage of sleep association to the waking state, so that the memory should be incorporated with the consciousness.

3. The ward sister told me the patient crawled under the beds on the previous night. He said nothing about this, but I caused him to associate on the feeling of dread of which he complained. Then came a story of being surrounded at night, when at a listening post, by a strong German patrol. He and his mate had to play hide-and-seek, with their lives for a forfeit; here he started again and said, "That's what made me crawl under the bed last night."

This case shows a kind of reversed association, where the episode recalls the dream action. The incident had been "forgotten."

4. Dream.—*A shell bursting, and a mass of fire.*

Open association was a failure; no further attempt was made, but he was sent to talk to the dreamer of No. 3. At the next interview he told me the meaning of the dream had come up when they were speaking of barrages; he had said at the time, "Stop, I've got what I want," and came out in a profuse sweat.

The association was with being under fire from incendiary shells and taking shelter for half an hour behind a pillar which gave very little cover.

5. Patient was a pre-war psychasthenic, with fear of being followed, fear of water, tics, and not enough confidence to do his own shopping. Nevertheless, he served three years in France in the R.A.M.C. He had a *recurring dream for years of being chased by someone big who caught him; he kicked his captor but could not hurt him, and the latter then beat him.*

No questions were asked nor was any explanation given, but he was sent to talk to the dreamer of No. 14. At the next interview he said he felt his dream must be like the other man's, but he could not recall anything. Being told that he could, he suddenly covered his face with his hands and showed extreme terror, refusing to tell what had come up. At last the following story was obtained: He went skating contrary to his mother's orders, and one boy fell through the ice and was drowned. The others ran home and said nothing; next day a policeman came to the house, and the boy bolted and was caught by the policeman, whom he kicked, and who hit him with a cane. The policeman took him home, and he received a beating from his mother. At the inquest the coroner first upbraided the boy and then told him to forget. Incredible as it may seem to one unfamiliar with repression, the patient had completely forgotten the incident.

Cases 4 and 5 show the working of a labour-saving method that often succeeds. Hearing another patient's account of a dream, and its meaning, certainly helps a man to recall a memory without the need for sleep association.

6. Dream.—*Chased by a mad captain round a gun. Terror!*

Open association negative.

Sleep association: the captain's face contained the source of terror. "Look at the face, who is it?" "It's Captain X." "Now open your eyes

and tell me about Captain X."

Captain X. used to swear at the man when he made mistakes with the gun mechanism, and this made him worse. He complained to the major, and Captain X. never swore at him again, but at the next mistake ground his teeth and said, "I'll haunt you." Patient was an undersized and timorous creature, always afraid of his work and his fellows. The episode had been repressed but the haunting was effective.

7. Patient had had seven fits preceded by an aura of lights.

Dream.—*In Birmingham when a Zeppelin came and turned on a searchlight, everyone the light touched was killed and the light followed the patient up an alley. Terror!*

Open association negative.

Sleep association. Lost in No-Man's Land. Terror! Fell into a trench. Ours or the enemy's? An officer turned a flashlight on him, and he felt, "Now I'm done."

"There's something else: I was going along an old trench and fell on something soft, it was German corpses and they were light like phosphorus."

The visual auræ contained black and green rings which he afterwards associated with the colour of smoke from shells.

He had no more fits, and this case may be compared with another in which the patient would hear a rushing sound and then fall. By sleep association on the rushing sound he recalled a memory of being terrified under shell fire on a certain occasion; the "fits" ceased at once, though they had been quite frequent.

8. Patient, a very intelligent man, had been told something about repressing his troubles.

Dream.—*He was collared in the grounds of a church and was dragged inside, where he saw people kneeling. He fought, broke the door and rushed out. Terror!* No analysis was attempted, but a talk followed on the theory of dreams. Next day he produced his own interpretation: he had been a deeply religious man but was now troubled by doubts.

This was, of course, not repressed, but he never had spoken of it.

9. Dream.—*Patient was chased by a horse. Terror!*

Sleep association. The horse is in a cart, a man is in the cart holding back the horse. "Who is the man?" "I don't know, he's in khaki." "Look at the horse." "He looks fierce, he's showing his teeth." (Terror!) "You've seen a face like that." "Yes, it's a German." (More terror!) Then came a story of a bayonet fight; patient was nearly stuck by a German, when a corporal put a pistol at the head of the German, who threw up his hands. (Still sleep association.) "Now, look at the man in the cart." "He's the corporal."

These two cases illustrate the symbolism of dreams, though in neither was there a complete repression. The bayonet story had been written out for me among other incidents, but the dream showed that it had not been talked about, as the patient admitted.

10. Patient was a cured (?) aphonic and had not received any analytic treatment. He stated, "Last night I shouted in my sleep about being buried. The chaps told me in the morning, and then it came back to me that I'd been buried. I felt queer and dizzy, and I shook so that I had to lie down."

11. Patient had been nervous for eight years, after pneumonia. During this

time he had a recurring dream, "*something catching hold of me from behind and holding me down, I wake up all of a sweat and trembling.*" He had a phobia of dogs. Whilst being questioned about this he suddenly was seized with great terror, clutching at his throat and attempting to bolt from the room. When quieter he could give no reason for the terror, so I said, "When you were a boy, a dog got you down from behind." More terror; tearing at his collar he gasped, "No, not a dog, a horse." Then he told of being attacked by a horse which knocked him down and tried to bite him between his shoulders. This happened in childhood and the memory was totally repressed. The phobia of dogs was really one of horses; I think there was a repression here in the conversation.

The benefit to the patient from this revival was wonderful.

12. Patient had an amnesia for most of his war experiences, including the winning of the Military Medal; these had been gradually revived and he was rapidly improving. He knew he was likely to be sent home.

Dream.—*Captured by Germans and treated well; it was in England.*

Open association negative.

Sleep association turned out to be an elaboration of the dream. "I can see the smoke of guns, now it is the smoke of *field kitchens;* now they have taken me to Longford, it's *Mr. Kitchen's field.*"

This illustrates the punning tendency in dreams.

A second dream taken the same day was: *I'm at home in an air raid; I'm not frightened; I take my people into a shed, and tell them they are all right.*

Sleep association. "I've got a feeling that I'm going home to look after them and make them happy. It seems real."

13. Patient's mates said he talked in his sleep and said, "Good gracious."

Open association negative.

Sleep association. After much delay, "It's a bell." Then he told of finding in a German trench a large bell which an officer told him to put in his bag, already very full. The patient said, "Good gracious, you'll have to carry it halfway yourself then."

The connection is rather weak here, as there was no emotion attached to the dream or its interpretation, and the expression "Good gracious!" is not unique. The result was of no therapeutic value.

14. Patient was a pre-war psychasthenic with various phobias; one "nervous breakdown."

Dream.—*Chased by a lion in a street at Diss. Terror!*

Open association. Stayed at Diss when a boy; saw a circus there; no memory of any fright there.

(Patient objected strongly to closing his eyes; said he feared "mesmerism." Probably this was a real fear of that process, for it was reasoned away by other patients.)

Sleep association. Terror was associated with the lion's face. "Well, look at his face." "He's chasing me." "Who chased you?" "The gipsy." Then came a detailed story (eyes still closed) of being chased; even the man's clothes were described minutely. When he opened his eyes the look of amazement was comic. "How did you do that, sir?" "Well, you know all I did." "But I could swear I felt your hands moving in front of me." "Look at my cigarette ash." (I had smoked during the interview to check his fear of mesmerism.) "Now tell me the story again." "I can't,

it's going again."

The memory went and could only be recalled by a repetition of sleep association. I kept him talking about it till I made him tell it to the ward sister. Next day he said he had written to his mother and told her, lest he might forget it again. He said, " I feel a great load off my mind."

15. Patient had by sleep association on a dream revived the memory of seeing a plane fall. The dream was almost true to fact, but the nationality of the plane was wrong, and the fuselage " came at " the dreamer. Two days later came a moonlight night, the first since his return to England. At moonrise he was noticed to be in a somnambulism; he was in a state of anxiety and went out of doors. Here he scanned the sky, saying, " He's not back. That's a German, the searchlight's got him; he's dropped six." This condition lasted about two hours. He was put to bed and watched for more information. At last he said, with great relief, " Here he is," and immediately lay back and went into a natural sleep. Next day he easily recalled, from the above phrases, a forgotten incident when a pilot went up for a quarter-hour practice flight by moonlight, lost the aerodrome, and was up for two hours. The aerodrome showed signals, bringing along a German plane which dropped six bombs. The somnambulism lasted about the same time as the incident reproduced, and reproduction was exact. The dream was remembered in the waking state, the somnambulism was not.

16. Dream.—*I was sitting with a man at a table, eating; there were a lot of women round. Suddenly the man fell back dead. I was determined to find who did it, and two or three women said they did it. Then one woman stood before me, and the others said she did it. I shot at her with a revolver, but it only clicked and I felt frightened. Then I fired again and a light appeared on her skirt and travelled up to her left eye. I woke up frightened.*

Sleep association. *The Man* was one of his platoon who got killed. As there was no emotion with this recall I guessed it was wrong.

The Woman gave no reaction.

The Click of the Revolver brought up the memory of a German attack, when he pulled off his rifle with no result and found himself without ammunition.

The Woman looked *scornful* and had a *wrinkled* face. The " scornful " look was that on the face of a wounded German prisoner who drew a revolver and shot one of our wounded. The patient bayoneted him. This he had told me previously.

The Wrinkles belonged to an old woman whom the patient believed to be a spy. This is an example of " condensation," two persons being represented in one. As yet the emotion of the dream was untouched, so I tried a long shot and told him the crowd signified a secret he didn't want to tell. This produced some emotion and he told me of a comrade, now dead, who had done something which the patient and another man had sworn never to reveal. He gave me the whole story and I must still respect his confidence.

Then I went back to the man who fell dead, expecting him to be identified with the above-mentioned comrade, but the patient suddenly cried, " In the dream my chums turned to women," and after a burst of weeping he gave me the repression which seems to be the mainspring of the dream. With his particular chum and some others he was at a meal when the chum stood up and was shot through the head. This had been completely repressed.

This dream, which shows the representation of at least five incidents, would perhaps repay fuller analysis, but in actual work I have to be satisfied when I have unearthed the repressed memory chiefly concerned;

the light and the change of his mates into women are unexplained, but his chum was shot through the left eye.

17. *Patient recently dreamed three times of being chased by a tiger.*

Open association. He had been reading about tigers.

Sleep association. The tiger chased him, and he saw two men writhing on the ground. They were in hospital blue and said they had been mauled by the tiger. "Look at the tiger's face." "He looks bad." "You've seen a man look like that?" "Yes, it's a man's face; it's a man who had a fit in the ward." "Now look at the other men." "They are having fits." "You are afraid of having fits?" "Yes." (Emotion.)

He admitted also a fear of insanity, and, being afraid to speak of these fears, had tried to forget them.

It will be of interest to note the relation which these dreams and their interpretations bear to Freud's theories, from which this method of investigation has been developed.

A striking contrast is the absence of sexual meaning, but the thorough Freudian would say that none of this series has been analysed in the Freudian sense, and that their full significance is still hidden; the same reason might be urged to account for the lack of representation of "wish fulfilment" (except in No. 12) or infantile fantasies.

In the mechanism of the dream the theories find their greatest support—repression as the result of conflict, in the sense of incompatibility between the repressed material and the rest of the patient's mind contents, being shown in most of them. The action of the censor with its resulting symbolism and disguise is plain, condensation and dream-punning are exemplified, whilst transference of emotion from the repressed incident to its dream representative gives the key to the revival of the incident.

Since many of Freud's symbols are given a sexual meaning, one need not expect them in a war dream; the only symbol described by Freud and occurring here is the crowd in dream No. 16, and it is possible that my suggestion of a secret drew out the story, irrespective of whether it was represented in the dream.

Cases Nos. 10 and 13, and a few others not described here, in which words spoken during sleep have been used as the starting point, resulted in the recall not of a dream but of the real incidents. This suggests that a dream, that does not enter the waking consciousness, never passes the censor, and therefore remains true to fact. Case No. 15, in which a dream which entered consciousness is contrasted with a somnambulism in the same patient, may be considered from this point of view. It is hardly possible to describe the display of emotion which accompanies the revival of these memories, and I have several times seen a man try to escape from my room in order to avoid telling his story. But the relief experienced and the gratitude expressed later are sufficient proof of the value of the practical application of the Theory of Repression, and that proof is manifest whether the revival is brought about by dream analysis, hypnosis, word association or any other method that may be employed according to the personal inclination and experience of the investigator.

Practical Notes.

A NEW TEST FOR ALBUMEN.

Léone gives the formula of a new test for albumen, which is so sensitive that it will show the presence of 1 milligramme of albumen in one litre of fluid.

Potassium bichromate - - -	10 gr.
Pure sulphuric acid, 25 per cent. - -	100 drops.
Glacial acetic acid - - - -	100 drops.
Distilled water - - - -	100 gr.

A white ring is formed where the reagent and the fluid to be tested come in contact, and the quantity of albumen can be determined approximately by the density and thickness of this ring, and the more or less quickly it appears. If it is formed at once, the amount of albumen is always above 0·5 gr. per litre; if, on the other hand, some minutes elapse before its appearance, there are only traces of albumen present. When none is present, a brown ring is formed at the junction of the two liquids.

The reagent is made by dissolving the bichromate in the water filtering, and allowing to cool. The acetic acid is then added, and after a few minutes the sulphuric acid.

For use 5 cc. are poured into a test tube, and the urine is allowed to run on to the surface of this slowly from a pipette.—(*Il Policlinico*, March, 1918.)

A TEST FOR BLOOD IN URINE, FÆCES, AND OTHER PATHOLOGICAL FLUIDS.

Thévenon and Roland have pointed out a method based upon the reaction given by pyramidon in the presence of oxidizers. The presence of blood is shown by the appearance of a violet colour in the fluid.

These reagents are required :—

1. Pyramidon - - - - -	2·50 gr.
Alcohol (90°) - - - -	50 cc.
2. Glacial acetic acid - - - -	1 cc.
Distilled water - - - -	2 cc.
3. Solution of hydrogen peroxide (12 vol.)	

The method used is as follows :—To 3 or 4 cc. of urine, not filtered, an equal volume of the alcoholic solution of pyramidon is added, and then from 6 to 8 drops of the acetic acid. After shaking up well, 5 or 6 drops of the peroxide solution are added to the mixture.

According to the amount of blood in the urine, the colour appears more or less rapidly; when there is a fair amount present, an intense violet colour is produced at once. If there are only traces of blood present or a very small amount, the blue-violet tinge appears in less than a quarter of an hour, attains a maximum intensity, and then disappears.

For testing fæces, the procedure is to titurate a small quantity of the fæcal matter with 3 or 4 cc. of distilled water. After filtering this, the test is carried out as in the case of urine.

The test has been carried out comparatively with Meyer's phenolphthalein test, and has been found to be more sensitive, easier to prepare, and to

keep better.—(*Le Progrès Médical*, December 7, 1918.)

A DRESSING FOR ULCERS.

Morlet has devised an occlusive dressing for ulcers of all kinds, except syphilitic, which, by means of Balsam of Peru, lessens the abundant discharge and does away with its fœtid smell :—

Balsam of Peru,	
Bismuth subnitrate - - -	of each 15 to 20 gr.
Ichthyol,	
Glycerine - - - -	of each 50 gr.
Water - - - - -	100 gr.

The raw surface of the ulcer is first cleansed with alcohol and the edges cleared. Strips of gauze impregnated with this paste, heated, are applied over the wound. This dressing can be left in place for ten days or a fortnight. One or two dressings, according to the size of the ulcer, are required, and seldom more. To promote the formation of a good epidermal covering, the patient is allowed to get up and walk about at times, so as to obtain a mechanical action of the dresing, in the nature of a massage, upon the wound.—(*Journ. de Méd. de Bordeaux*, November, 1918.)

OPIATES IN CARDIO-VASCULAR AFFECTIONS.

Laubry and Esmein report on the preparations of opium, which they have used with good effect in the treatment of certain symptoms in these affections.

For pain, the opium is combined with analgesics and small doses of cardiac tonics.

Sulphate of quinine,	
Phenazone - - - -	of each 0·20 gr.
Caffeine,	
Powder of opium - - -	of each 0·02 gr.

for one powder.

One cachet may be given every three hours, as long as the effect of the opium is required.

Dionine - - - - -	0·20 gr.
Cherry-laurel water - - - -	10 gr.

" Ten drops to be given two or three times a day."

In painful crises, morphia or aceto-morphia may be combined with trinitrine.

Morphia hydrochlorate (or acetomorphia hydrochlorate) - - - -	0·06 gr.
Alcoholic solution of trinitrine (1 per cent.)	60 drops.
Cherry-laurel water - - - -	20 gr.
Distilled water - - -	to 100 gr.

" One teaspoonful to be taken two or three times a day."

When a rapid effect is required, a hypodermic injection of morphia is the best way to procure it.

For insomnia, opium may be combined with a cardiac tonic.

Dover's powder - - - -	0·20 gr.
Digitalis in powder - - - -	0·10 gr.

given in a cachet.—(*Journ de Méd. et de Chir. prat.*, December 10, 1918.)

Reviews of Books.

Syphilis and Public Health. By Lt.-Col. EDWARD B. VEDDER, A.M., M.D., Medical Corps, United States Army. Pp. 315. Philadelphia and New York: Lea and Febiger. $2.

AT the present time anything American is accepted with open arms, and no criticism offered. This book does not require its country's glamour to make it acceptable; it is a classic, and will rank as such. Dr. Vedder speaks with a complete knowledge of his subject and publishes his views to the world with the *imprima'ur* of the Surgeon-General of the United States Army, who has given his permission for such publication. The book consists of four chapters, an introduction and an appendix. The four chapters deal with the prevalence of syphilis, the sources of infection and methods of transmission, personal prophylaxis and public health measures. The need for the book is shown by the author's own words at the beginning of his introduction, viz., "Syphilis is one of the most prevalent of all infectious diseases, causes an incalculable amount of suffering and economic loss, and, because it has so far eluded sanitary control, is a constant menace not only to the licentious but to the clean-living public as well. . . . With the exception of gonorrhœa, syphilis is the most prevalent of all serious infectious diseases." These remarks naturally are based chiefly on American statistics, but the conclusions drawn may be applied to the whole world. Emphasis is laid on syphilis being a direct predisposing cause of tuberculosis of the lungs and an indirect predisposing cause of lung diseases generally, especially in the youth and adult; and the author goes so far as to suggest that sanatoria should make provision for the diagnosis and treatment of syphilis, *if they wish to give their tuberculous patients a reasonable chance for recovery.*

Negroes appear to suffer from syphilis much more than the white population, due to the generally admitted sexual promiscuity of the majority of the former race. Colles's and Profeta's laws as to normal women, who bear syphilitic children, not contracting syphilis when exposed to infection, and children, who are born of syphilitic mothers, not becoming infected (though suckled by their mothers), are explained by the author of the book under review as due to the fact that the mothers and children are already infected and suffer from syphilis though usually without clinical manifestations other than a positive Wassermann—certainly a reasonable and commonsense explanation. We are pleased to note that innocently acquired syphilis is recognized, and proper hygienic precautions for such are suggested by Dr. Vedder, who adds, however, that "the fact cannot be glossed over that the vast majority of all syphilitic infections are acquired from sexual intercourse."

Personal prophylaxis is dealt with under the three headings of (1) surgical method (circumcision); (2) mechanical (condoms), and (3) chemical (mercurial ointments or solutions); and it is pointed out that such methods must be *compulsory* to be of real value. The ethics of venereal prophylaxis are set out on pp. 192–197; and prostitution, as a sociological problem, is discussed on pp. 212–219.

Public health measures are given in Chapter IV., and follow the usual lines—education, notification, segregation and reglementation, and treatment, the abolition of quacks and quack remedies, etc. The references at the

end of each chapter are excellent, as are the appendix and index.

Massage and Medical Gymnastics. By EMIL A. G. KLEEN. Translated by Dr. Mina L. Dobbie. Pp. xiv + 618. Illustrated. London: J. & A. Churchill. 21s. net.

THIS book has been for many years a standard text-book in Sweden and none of its value has been lost in Dr. Dobbie's excellent translation. British and American Physico-therapy cannot, therefore, fail to be advanced by its publication in English. On the other hand, it is a cause for surprise and regret to find how slow Swedish teaching has been to adopt innovations which have proved of the utmost value in other countries. To pass over in silence the work of Lucas-Championnière in Paris, of Bergonié in Bordeaux, and of authorities such as Sir Robert Jones—to mention only one worker—in this country is to render any book on physico-therapy incomplete. Two notable instances of failure to advance with the times are shown in the sections dealing with the treatment of recent injury and in the scant reference, sometimes almost grudgingly made, to electrical treatment.

But even though conservatism has been too pronounced, it is good to have this book, to possess in English all that is best in Swedish massage, and that, too, not only from the pen of Emil Kleen himself but from his eminent collaborators, Arvedson, Haglund, and Zander, each of whom has contributed a valuable chapter on his own special subject.

Lessons on Massage. By MARGARET D. PALMER, formerly Masseuse and Manager of the Massage Department of the London Hospital, and Instructor of Massage to the Nursing Staff. Pp. x + 340. Illustrated. Fifth edition. London: Baillière, Tindall & Cox. 10s. 6d. net.

SINCE it was first published in 1901 this book has passed through four editions and nine reprints, a history which bears adequate testimony to its merits. A new chapter on Swedish Remedial Gymnastics, written clearly and concisely, is a valuable addition to the work. The chapter on bandaging is one of the best we know. The continued popularity of the book amongst students of massage, for whom it was originally written, is assured. Some of the sections on anatomy are still hardly adequate, and surface markings throughout receive too scant notice. The absence of directions as to the use and the abuse of splints, especially in cases of paralysis, is to be deplored; and the space devoted to the treatment of sprains and fractures is inadequate. These omissions constitute a serious blemish in an otherwise admirable work.

Gymnastic Treatment for Joint and Muscle Disabilities. By Brevet-Col. H. C. DEANE, R.A.M.C. Pp. 146. Illustrated. London: Henry Frowde & Hodder & Stoughton.

COLONEL DEANE, himself a well-known athlete of Indian-club swinging fame, tells in this small volume how he has applied his gymnastic knowledge and experiences to the requirements of the wounded soldier. His main doctrine is the axiom of Aristotle—movement is life; and, putting this into practice, he shows that the best way to restore function to any one limb is to exercise the rest of the body to the uttermost. The disabled member will then, voluntarily or involuntarily, take its share in the work. No elaborate apparatus is required; indeed, Colonel Deane's contempt for mechanical devices of all sorts is apparent. The main secret of his success rests in the restoration of volition and of confidence, from which alone comes function. Despite the absence of scientific reasoning or research, and despite its comparatively insignificant size, this book merits a high place amongst the many volumes already produced in the Oxford Medical Publications during the war. It should be studied carefully by all those who are responsible for the after-treatment of the wounded.

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Both these preparations contain methyl salicylate. Balmosa is a white cream, in which the methyl salicylate with rubifacients is incorporated with a basis which is non-greasy, but forms a good lubricating medium for rubbing, and promotes rapid absorption of the drug. It does not irritate or stain the skin, or soil the clothing. It is put up in collapsible tubes, and therefore can be carried about by the patient for use when required.

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THE "LIMPET" SYSTEM OF ELECTRODES.

(London: The Medical Supply Association, Ltd., 167–185, Gray's Inn Road, W.C.1.)

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ANIODOL.

(London: The Anglo-French Drug Co., Ltd., Gamage Building, Holborn, E.C.1.)

This preparation is a combination of tri-methanal and allyl sulphocyanide in a solution in glycerine. It is a perfectly clear and colourless fluid with an alliaceous odour. It is claimed to be an exceedingly powerful and effective antiseptic, germicide, and deodorizer. It does not coagulate albumen, does not stain instruments or harm them in any way, and is stable. It is non-poisonous and non-irritant. It has a high carbolic co-efficient, is non-inflammable, and contains no alcohol.

Mixed with water, in the proportion of one teaspoonful to a quart, it forms a lotion which can be used for all general purposes of disinfecting, deodorizing, and sterilizing, as well as for local use for wounds, syringing,

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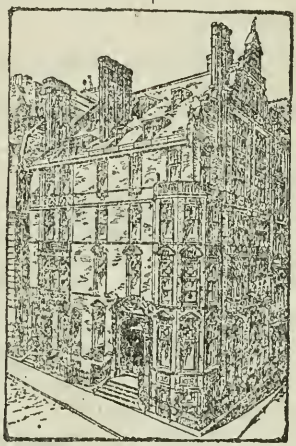

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